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# An Investigation of the Relationships of Teacher Professional Development, Teacher Job Satisfaction, and Teacher Working Conditions

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LOYOLA UNIVERSITY CHICAGO

AN INVESTIGATION OF THE RELATIONSHIPS OF  
TEACHER PROFESSIONAL DEVELOPMENT, TEACHER JOB SATISFACTION,  
AND TEACHER WORKING CONDITIONS

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL OF EDUCATION  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF EDUCATION

PROGRAM IN CURRICULUM AND INSTRUCTION

BY

THOMAS MEAGHER

CHICAGO, ILLINOIS

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## TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vii
ABSTRACT	ix
CHAPTER I: INTRODUCTION	1
The Professional Significance of the Study	6
Definition of Key Terms	8
Ten Variables of the Study	11
Overview of the Methodology	13
Conclusion	15
CHAPTER II: LITERATURE REVIEW	17
Introduction	17
History of Significant Developments of American Secondary Education	19
Brief History of the Development and Implications of Teacher Professional Development	25
Presenting a Recent Call for Professional Development	41
Timeline of the Demands for Improvement of Mathematics Curriculum and Pedagogy	42
Mathematics Curriculum Reform Creates a Demand for Professional Development	47
Definition of Teacher Professional Development	52
Lists of Characteristics of Professional Development	56
The Commonalities of Adult Learning and Teacher Professional Development	65
Teacher Job Satisfaction	73
Definitions of Job Satisfaction	83
Teacher Working Conditions	91
Budget Implications for Professional Development of Teachers	100
Conclusion	103
CHAPTER III: METHODOLOGY	108
Introduction	108
Population of Schools	109
Ten Variables of the Study	115
Teacher Professional Development and Student Academic Achievement	117
Likert Items and Scales	124
The Instrument	126
Reliability and Validity of the Questionnaire	133
Teacher Access to Distribute the Online Questionnaire	139

Administering the Questionnaire	140
Description of Data Analysis	142
First and Second Research Questions	147
The Hypothesis Tests	148
The Third Research Question	150
The Fourth Research Question	151
Brief Summary	151
 CHAPTER IV: RESULTS	 154
Summary of the Study	154
Research Questions	155
Results	157
 CHAPTER V: CONCLUSION	 172
Purpose of the Study	172
Findings	172
Limitations of the Study	179
Recommendations for Future Research	183
 APPENDIX A: LETTER REQUESTING PERMISSION TO CONTACT TEACHERS	 190
 APPENDIX B: LETTER OF INTRODUCTION TO MATHEMATICS TEACHER	 192
 APPENDIX C: ONLINE QUESTIONNAIRE	 194
 APPENDIX D: EMAIL GRANTING PERMISSION FROM DR. ERIC HIRSCH	 203
 APPENDIX E: INFORMATION ON NEW TEACHER CENTER	 205
 REFERENCES	 209
 VITA	 222

## LIST OF TABLES

Table 1: Categories of Characteristics of Teacher Professional Development	61
Table 2: Four Sections of the Questionnaire	130
Table 3: Correlation Between Teacher Professional Development and Teacher Job Satisfaction from all Schools	157
Table 4: Correlation Between Teacher Professional Development and Teacher Job Satisfaction from Schools with Low-Income Rates Less Than 20%	158
Table 5: Correlation Between Teacher Professional Development and Teacher Job Satisfaction from Schools with Low-Income Rates Greater Than 40%	159
Table 6: Correlation Between Teacher Professional Development and Teacher Working Conditions from all Schools	160
Table 7: Correlation Between Teacher Professional Development and Teacher Working Conditions from Schools with Low-Income Rates Less Than 20%	161
Table 8: Correlation Between Teacher Professional Development and Teacher Working Conditions from Schools with Low-Income Rates Greater Than 40%	162
Table 9: The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Three Characteristics of Effective Teacher Professional Development	163
Table 10: The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Characteristics of Effective Teacher Professional Development from Schools with Low-Income Rates Less Than 20%	164
Table 11: The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Characteristics of Effective Teacher Professional Development from Schools with Low-Income Rates Greater Than 40%	165
Table 12: The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Four Areas of Teacher Working Conditions from all Schools	167



Table 13: The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Areas of Teacher Working Conditions from Schools with Low-Income Rates Less Than 20%	169
Table 14: The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Areas of Teacher Working Conditions from Schools with Low-Income Rates Greater Than 40%	170
Table 15: Means and Standard Deviations for Ten Variables	188

## ABSTRACT

Demands to changes of instruction for mathematics classrooms are presented in standards promoted by the National Council of Teachers of Mathematics, Illinois State Board of Education and other government reports creates a demand for teacher professional development to support teachers to adapt to these changes of instruction. The overall purpose of this study investigated characteristics of effective professional development and how those characteristics are associated with teacher job satisfaction and teacher working conditions. With the completion of this dissertation, this study adds to the literature relevant to teacher professional development by demonstrating an association between teacher professional development and teacher working conditions.

This non-experimental quantitative study examined 23 lists of characteristics of professional development to provide designers of professional development programs the frequency that specific characteristics were mentioned on the 23 lists. Also, this study administered a Likert scale questionnaire to secondary mathematics teachers to measure the teachers' perception of the three variables: teacher professional development, teacher job satisfaction, and teacher working conditions. The completed questionnaires were used to calculate measures of the three variables and these measures were used to calculate Pearson correlation coefficients. Ultimately, tests of correlations were conducted with the Pearson correlation coefficients to measure the associations between the three

variables. Four research questions relating to these associations were created that guided the details of this quantitative study.

The results of the data analysis revealed a statistically significant association between teacher professional development and teacher working conditions. Also, the results of a second test of correlation revealed that the association between teacher professional development and teacher job satisfaction was not significant.

## CHAPTER I

### INTRODUCTION

The *No Child Left Behind Act of 2001* (hereafter NCLB 2001), the 1996 report *What Matters Most: Teaching for America's Future* and the 2007 report *National Action Plan for Addressing The Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System* call for highly qualified teachers in our nation's classrooms (National Commission on Teaching and America's Future, 1996; National Science Foundation, 2007). Professional development provides a solution by training teachers to become highly qualified. Along with the demand for highly qualified teachers, the National Council of Teachers of Mathematics (NCTM) published *Curriculum and Evaluation* in 1989, which initiated the call to reform the content and pedagogy of secondary mathematics classrooms (National Council of Teachers of Mathematics, 1989). More recently, the NCTM has continued to provide a vision of mathematics reform by publishing *Principles and Standards for School Mathematics*, which prescribes a set of standards for mathematics curriculum in the classroom (National Council of Teachers of Mathematics., 2000). Furthermore, many states have created standards to guide educational programs in their respective schools. Specifically, on June 24, 2010 the Illinois State Board of Education (ISBE) adopted the *Common Core State Standards for Mathematics* (Common Core State Standards for Mathematics, 2010; Illinois Learning Standards, 2010). Both sets of standards from the NCTM and ISBE

have continued the process of reform for mathematics curriculum in Illinois. This reform requires teachers to gain additional knowledge and skills in their content areas. The additional knowledge will lead to professional development experiences for these secondary mathematics teachers. Furthermore, in the 2007 report entitled *The National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering and Mathematics Education System*, the National Science Board expressed the need for effective teachers. The document's executive summary presents a challenge relevant to the present study: that is to ensure an adequate supply of well-prepared and highly effective STEM teachers. Also, the report recommends actions that support "preparing STEM teachers to teach STEM content effectively" (National Science Foundation, 2007, p. 10). On August 9, 2007, President George W. Bush signed into law *The America Creating Opportunities to Meaningfully Promote Excellence in Technology Education and Science Act (COMPETES)*. The COMPETES Act provides funding for mathematics and science teachers of elementary through secondary students to receive support to implement programs that will use best practices and in-service training relating to those practices (The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (COMPETES), 2007; Fact Sheet: America Competes Act of 2007, 2007). These reports represent the federal and state governments', and national mathematics organizations' concern for professional development for the secondary mathematics teachers.

Concurrent with this curriculum reform in secondary mathematics, organizations such as the National Staff Development Council (2001), the American Federation of

Teachers (American Federation of Teachers, 2002) and academic professionals like Elmore (1997), Clark (1994), Darling-Hammond and McLaughlin (1995), and Sparks and Hirsch (2000) have published lists of characteristics that professional development experiences should feature in order to be effective. Also, Guskey (2003) has created a list of 21 categories to sort characteristics of professional development. It is important to differentiate characteristics of professional development from Guskey's categories of characteristics of professional development because the categories appear to be very similar to the characteristics. Without making a distinction between the two, further descriptions within this research would be confusing to the reader. Each of Guskey's categories is a general or broad characteristic. Thus, the general categories contain characteristics from the many lists in the literature. These general categories allow the various authors' characteristics to be sorted into groups and analyzed.

There exist at least 23 lists of characteristics of effective teacher professional development in the literature pertaining to professional development. The 23 lists do not contain identical characteristics. There is no universal list of characteristics of effective teacher professional development. Many lists contain similar characteristics that can be categorized; for example, one of Guskey's categories is that professional development should enhance the teachers' pedagogical and content knowledge. Many lists contain at least one characteristic that fits into this category. Other lists contain a characteristic that is included in very few other lists. For example, only three lists of the total 23 contain a characteristic that fits Guskey's category that professional development should involve families and other stakeholders. None of the lists completely agree on which

characteristics must be present in order for a professional development experience to be highly effective. Given the wide range of characteristics provided in the professional development literature, there is no universal list. Designers of professional development programs must sift through a large amount of literature from many different sources. An analysis completed in this study found the characteristics mentioned most frequently in the literature. These most frequently mentioned characteristics are given priority in a description of effective teacher professional development in this study. Therefore these characteristics of teacher professional development were used to guide the data collection process for this study. Next, it is appropriate to describe the connection between teacher professional development, teacher job satisfaction, and teacher working conditions.

In two similar models depicting the connection between teacher professional development and student academic achievement, Guskey (1986) and Yoon et al. (2007), show just a few of the variables interwoven in the connection. There exists a myriad of factors between the treatment of a professional development opportunity experienced by a teacher and the desired result of improved student academic achievement. One could easily perceive it as impossible to completely study the relationships between teacher professional development and student academic achievement. Marzano (2003) describes factors that relate first to the school in which the learning takes place, and second to factors that relate to the teacher in the classroom among other factors that are intertwined in the relationship between teacher professional development and student academic achievement. However, teacher job satisfaction and teacher working conditions are two relevant variables that could have relationships with professional development. It could

be possible that if teacher professional development improves a teacher's attitude toward her job, then she may demonstrate better job performance. Furthermore, a teacher who performs better in the classroom may have students who improve academically. This study does not attempt to investigate or demonstrate a relationship between teacher professional development and student academic achievement. It is a purpose of this study to investigate the relationship between teacher professional development, and the teacher related variables of teacher job satisfaction and teacher working conditions.

Formally, the purpose of this study was to investigate the relationships between teachers' perceptions of the following variables: characteristics of teacher professional development, teacher job satisfaction, and teacher working conditions. Furthermore, this study investigated the relationships between characteristics of teacher professional development and teacher job satisfaction, as well as, an examination of four areas of teacher working conditions as they relate to teacher professional development. Four research questions have been created to guide the investigations of these relationships.

Ultimately, the objective of professional development for teachers is to improve student academic achievement. As mentioned previously, this study does not suggest to define or to explain the relationship between teacher professional development and student academic achievement, for the relationship contains far too many variables to be managed in one study. However, the variables of teacher professional development, teacher job satisfaction, and teacher working conditions are manageable. Also, learning more about the relationships between these variables could provide school leaders with additional knowledge to increase the effectiveness of the professional development



opportunities they provide for their teachers. This study focuses on some of the links of the relationship that relate specifically to the teacher. The researcher hypothesized that it is possible that a teacher who receives high quality effective professional development experiences would report high levels of positive attitudes about her job or high teacher job satisfaction. The researcher anticipated that when a teacher reports high job satisfaction, then she would demonstrate higher levels of performance in her job. Higher levels of performance could consist of better instruction in the classroom that in turn could lend to improved student academic achievement. Therefore this study focuses on the connection between the teacher's perceived level of quality of their professional development experiences and the teacher's reported job satisfaction.

#### The Professional Significance of the Study

Within the literature, there are at least 23 lists of characteristics, which have been created by various individuals or national organizations. None of these lists of characteristics completely agrees with another to provide a universal list to designers of professional development. Also, these lists contain a myriad of characteristics. Guskey (2003) created 21 categories to sort the myriad of characteristics found in the lists from the literature. The current study contains an analysis of 23 lists of characteristics found in the literature. This analysis synthesized the existing information of characteristics and provides designers of professional development two pieces of information. First, the analysis completed in this study identifies which of Guskey's categories, are mentioned most frequently in teacher professional development literature. The researcher posits that if a category of a characteristic of professional development is mentioned most frequently

in the literature then that category should have priority in regard to importance to be studied. This analysis provides the designers of professional development with an initial position from which to design professional development programs. If most lists contain a particular category then a designer of a professional development program should give priority to include that category.

Second, Moore (2004), Beswick (2007), and Borasi and Fonzi (1999) propose that teachers need to construct new content and pedagogical knowledge. Also, because teacher professional development directly relates to adult learning models, the categories of characteristics of effective professional development should be guided by the fundamental principles of the social constructivist learning model and an adult learning model. The analysis attempts to determine whether the three most frequently mentioned categories do relate to the social constructivist learning model and adult learning models. Again, the researcher claims that using the social constructivist learning model and adult learning models provides criteria by which to begin to synthesize the 23 lists. It is not the purpose of the current study to prove that certain categories are the most effective. It is a purpose of the current study to provide information for designers of professional development that indicates which categories are mentioned most frequently and how these categories relate to teacher job satisfaction and teacher working conditions.

The current study provides three benefits for educators. First, this study provides a synthesis of the existing literature of categories of characteristics of professional development for designers of professional development. The synthesis guides the designers through the vast amount of existing literature on characteristics to those

categories that are mentioned most frequently. Second, this study provides an instrument and methodology for similar populations to evaluate existing professional development programs. Third, the study provides greater understanding of the relationship between teacher professional development, teacher job satisfaction, and teacher working conditions. The next section provides an overview of the methodology used in the current study.

### Definition of Key Terms

It is necessary to define the key terms of this study. The key terms include *teacher professional development*, *teacher job satisfaction*, and *teacher working conditions*. Loucks-Horsley (1998), Abell and Lee (2008), Elmore (1997), Corcoran (1995a), Desimone et al. (2002) all provide either explicit definitions of professional development for teachers or general descriptions. Also, the NSDC (2008) published a definition of professional development to be used in the reauthorization of the NCLB 2001.

In *Designing Professional Development for Teachers of Science and Mathematics*, Loucks-Horsley (1998) uses the term “professional development of teachers” to mean the opportunities offered to educators to develop new knowledge, skills, approaches and dispositions to improve their effectiveness in their classrooms. This definition begins to provide a description that expands beyond the one-day workshop. Corcoran (1995a) and Elmore (1997) add two more aspects to the definition. They state that professional development of teachers should consist of a program that extends over time and is supported by the school’s administration. Desimone et al.

(2002) argue “professional development is considered an essential mechanism for deepening teachers’ content knowledge and developing their teaching practice. As a result, professional development could be a cornerstone of systemic reform efforts designed to increase teachers’ capacity to teach to high standards” (p. 81). Finally, the NSDC has proposed a formal definition of professional development to be used in the reauthorization of NCLB 2001. This formal definition provides a very complete description, including several characteristics of what the NSDC claims make effective professional development (National Staff Development Council, 2008). The NSDC’s definition states that professional development is a comprehensive, substantial and intense program that improves teacher effectiveness in raising student achievement.

Also, it is necessary to explain that professional development for teachers is not the same as pre-service education, teacher education or one-day workshops. Abell and Lee (2008) indicate that professional development is for teachers with teaching experience who would like to advance their curriculum and knowledge. Teacher education is not the same program as professional development because teacher education or pre-service education is intended for individuals who have not taught and are learning to teach. Also, the NCLB 2001 specifically states that professional development is not equivalent to the one-day workshop. As mentioned previously, professional development is an ongoing component of a school district’s improvement plan (Corcoran, 1995a). The current study uses the term professional development for teachers as described by these authors and documents.

The term *job satisfaction* may seem straightforward enough, but literature does provide specific descriptions. Two are included here that represent the most common descriptions. First, Balzer et al. (as cited in Reio & Kidd, 2006) defined job satisfaction “as the feelings a worker has about his or her job or job experiences in relation to previous experiences, current expectations, or available alternatives” (p. 357). Also, Huysman (2007) defines teacher job satisfaction as “the sense of contentment and happiness of individuals in their current teaching position” (p. 16). These definitions consist of some measure of emotional connection to the employee’s current position relative to a past history of work or to future opportunities.

It is useful to rely on the literature for descriptions of teacher working conditions. A review of the literature revealed three significant factors of teacher working conditions. First, the physical elements of the school describe the condition of the school and the space in which teachers work. Second, the teachers’ assignments refer to the type of classes the teacher was scheduled to teach and the type of students in her classroom. Third, the curriculum, assessment, and teachers’ accountability to the assessments made up another factor of teachers’ working conditions (Johnson, Berg, & Donaldson, 2005). This section provided definitions of the significant terms of this study as provided by the literature. The following section will provide the operationalized definitions of the ten variables of this study. These definitions relate directly to the online questionnaire used to collect data to answer the four research questions.

### Ten Variables of the Study

The term *teacher professional development* is the mean of the 16 items numbered 1-16 from the online questionnaire that explain the presence of an ongoing program offered to educators to develop new knowledge, skills, approaches and dispositions to improve their effectiveness in their classrooms (Elmore, 1997; Loucks-Horsley et al., 1998).

The term *teacher working conditions* is the mean of the 24 items numbered 17-40 from the online questionnaire that explain the presence of physical and daily schedule attributes, school leadership attributes, and professional development opportunities of the teacher's work environment.

The term *teacher job satisfaction* is the mean of the 16 items numbered 42-57 from the online questionnaire that explain the presence of feelings as a worker in the teacher's current teaching position (Hirsch, Emerick, Church, & Fuller, 2006; Huysman, 2007).

The term *enhancement of teacher's knowledge* is the mean of the six items numbered 1, 6, 7, 8, 15, and 16 from the online questionnaire that explains the presence of professional development experiences that enhance the teacher's understanding of both the content they teach in the classroom and the ways students learn that content (Guskey, 2003).

The term *collaboration* is the mean of the four items numbered 2-5 from the online questionnaire that measure the presence of opportunities for teachers to work

together, reflect on their practices, exchange ideas, and share strategies and expertise during teacher professional development experiences (Guskey, 2003).

The term *time and resources* is the mean of the six items numbered 9-14 from the online questionnaire that measure the presence of time during teacher professional development experiences to deepen teachers' understanding of content, analyze students' work and develop new approaches to instruction (Guskey, 2003).

The term *time factors* is the mean of the three items numbered 17, 18, and 19 from the online questionnaire that explain the presence of impediments on teacher's time to plan and collaborate (Hirsch et al., 2006).

The term *facilities and resources* is the mean of the five items numbered 20 through 24 from the online questionnaire that explain the presence of important resources such as instructional materials, communications technology, office equipments, and a clean safe work environment (Hirsch et al., 2006).

The term *school leadership* is the mean of the seven items numbered 25 through 31 from the online questionnaire that measure the presence of leadership conditions that contribute to trusting, supportive, empowering environments and sustained efforts to address teacher concerns (Hirsch et al., 2006).

The term *professional development* is the mean of the nine items numbered 32-40 from the online questionnaire that measure the extent the resources and opportunities available for teachers to participate in professional development (Hirsch et al., 2006).

The following four research questions will guide the current study to its purpose:

*Research Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

The null hypothesis for the first research question is there is no significant relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

The null hypothesis for the second research question is there is no significant relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire.

*Research Question 3- Of the three characteristics of effective professional development: Collaboration, Time and Resources, and Enhancement of teacher's knowledge, which has the strongest relationship with teacher job satisfaction?*

*Research Question 4- Of the four areas of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development, which has the strongest relationship with teacher professional development?*

### Overview of the Methodology

The quantitative methodology of this study employs a questionnaire to collect data. Secondary mathematics teachers in Lake County, Illinois have completed the questionnaire, which asks for their perceptions of teacher professional development,



teacher working conditions, and teacher job satisfaction. In addition to the questionnaire, an analysis of the 23 lists of characteristics of effective professional development found in the literature provides priority to three categories of characteristics. The three most frequently mentioned categories of characteristics are as follows. First, professional development experiences enhance teachers' content and pedagogic knowledge. Second, professional development experiences provide educators with sufficient time and other resources. Third, professional development experiences promote collegiality and collaboration. The questionnaire focused on these three categories. Additionally, these same categories, which are mentioned most frequently, are similar to the fundamental principles of the social constructivist learning model and adult learning models.

The questionnaires have been administered to teachers of mathematics departments at thirteen of the secondary schools in Lake County during the 2010/2011 school year. The 67 items on the questionnaire have Likert item responses that range from one (the category is 'never' present in the professional development experiences) to five (the category is 'always' present in the professional development experience) (Hirsch et al., 2006). The means and standard deviations of the responses from the approximately 300 secondary mathematics teachers were used to determine the relationship between the three variables, teacher professional development, teacher job satisfaction, and teacher working conditions.

### Conclusion

The combination of the NCLB 2001, the NCTM's *Principles and Standards for School Mathematics*, and the ISBE *Common Core State Standards for Mathematics* demand highly qualified teachers in Illinois secondary public classrooms, and reforms to mathematics content and pedagogy. Secondary mathematics teachers need training in the form of professional development experiences in order to meet these demands (Illinois State Board of Education, 1997; National Council of Teachers of Mathematics, 1989; National Science Foundation, 2007).

Designers of professional development programs for teachers need the knowledge of the characteristics of effective professional development to create these professional development experiences. Also, the relationship between professional development experiences that a teacher receives and the ultimate goal to improve student academic achievement is very complex and has too many variables to be investigated in one study. Therefore, this study focused on one area of the complex relationship. This study investigated the relationships between characteristics of teacher professional development, teacher job satisfaction, and teacher working conditions.

Also, the current study contains an analysis of 23 lists of characteristics of professional development found in the literature. The analysis sorted the numerous characteristics into Guskey's (2003) 21 categories to find which categories were mentioned most frequently in the teacher professional development literature. The results of the analysis give priority to three categories of characteristics. The three categories defined by Guskey are: (a) Professional development experiences enhance teachers'

content and pedagogic knowledge, (b) Professional development experiences provide educators with sufficient time and other resources, and (c) Professional development experiences promote collegiality and collaboration. The questionnaire used these categories of professional development as a framework to measure teachers' perceptions of their professional development experiences.

The next chapter traces the foundational developments of professional development and other factors in American public education over the last century. Furthermore, the next chapter provides the analysis of 23 lists of characteristics of professional development found in the literature. Also, the next chapter demonstrates in more detail the need for effective professional development for secondary mathematics teachers that were created by the demand for highly qualified teachers and the reform of mathematics curriculum and pedagogy.

## CHAPTER II

### LITERATURE REVIEW

#### Introduction

This review of the literature contains a number of sections that provide material that has historical relevance to the variables of this current study. Other sections provide descriptions of teacher professional development, teacher job satisfaction, and teacher working conditions that can be found in the literature. These sections blend together to address six topics to provide the necessary background for the context of this study. The first topic provides a historical framework of the foundational developments in secondary education since the last decades of the 19<sup>th</sup> century. Also, the history of secondary education in America has had effects on the professional development of teachers. The second topic provides a historical foundation of professional development by looking back to the end of the 19<sup>th</sup> century and highlighting the foundational developments in American public education and legislation that relate to professional development. The third topic reports the need for teacher professional development as a solution to improve classroom instructional practices by improving classroom teachers. Also, within the third topic, a timeline of literature presents the demands to improve mathematics curriculum reform. There have been calls for shifting the curriculum in secondary mathematics classrooms from a textbook-based curriculum to a standards-based curriculum as states create sets of standards to guide the educational programs that they offer (Goldsmith &

Mark, 1999; National Council of Teachers of Mathematics, 1991). The fourth topic presents current definitions of teacher professional development and an analysis of characteristics of effective professional development found in professional development literature and how the characteristics relate to social constructivist learning and adult learning. Furthermore, this fourth topic reduces the lists of characteristics to allow a more detailed investigation of the relationship of teacher professional development with both teacher job satisfaction and teacher working conditions. The fifth topic of this review provides background of teacher professional development and teacher job satisfaction found in the literature. This section describes two models of motivation and job satisfaction. Also, the fifth topic investigates which factors of teacher working conditions have an impact on teacher job satisfaction and teacher professional development. Next, the methodology of the current study uses a questionnaire to collect data measuring the three variables: (1) Teacher professional development, (2) Teacher job satisfaction, and (3) Teacher working conditions. Finally, the sixth section of the literature review addresses an area that is appropriate to include in any study of teacher professional development. This section provides background on the budget implications of teacher professional development. The next section presents the first of the six topics of this literature review, and it provides historical information that is foundational to this research.

### History of Significant Developments of American Secondary Education

In 1894, the Report of the Committee of Ten provided guidelines for the purpose of secondary schools in America (Taylor, 1894; Valentine, 1946). Three relevant comments come from the report. First, the Committee of Ten stressed continuity of education offered to American youths, starting with primary schools and continuing through university education (Good & Tellar, 1973; Tyack, 1967). At the time of the report, secondary education was not compulsory, and some communities did not offer secondary education for their youths, so a gap existed between elementary schools and the university (Tyack, 1967; Valentine, 1946). Second, the Committee of Ten recommended uniformity of curriculum in all secondary high schools. The committee members attempted to create a full four-year program that all secondary schools should follow and that would meet the needs of those students who wished to continue on to higher education (Taylor, 1894; Tyack, 1967). Third, according to the report, not all secondary students were expected to graduate and continue their education at a university. Only the best students were expected to graduate (Valentine, 1946).

At the turn of the 19<sup>th</sup> century, there were three important developments in American secondary education. The first relates to the enrollment in these schools. Approximately 700,000 students were attending secondary schools, which was a mere 11.4% of the total number of individuals in the population of fourteen to seventeen years of age (Biennial Survey of Education in the United States). Second, in 1917, the Smith and Hughes Act was passed, which provided federal funds for secondary schools so that these schools could provide vocational training for their students (Tyack, 1967;

Valentine, 1946). The passing of the Smith and Hughes Act demonstrated that secondary education was no longer only college preparatory. Third, the era of progressive education began to take shape as Dewey, Eliot and Parker continued their work in education (Tyack, 1967; Valentine, 1946).

There exists today a need for continued professional development, given these three significant factors of change in the first third of the 20<sup>th</sup> century. It is important to relate these three changes to subsequent changes in professional development. First, the increased enrollment of students in American secondary schools added diversity to the secondary schools. As mentioned earlier, approximately 700,000 students between the ages of 14 and 17 were enrolled at the beginning of the 20<sup>th</sup> century, representing only 11% of that age group's total population. By 1940, the number of students in the same age group enrolled in secondary schools had increased to more than seven million students, representing approximately 73% of the youths in that age range. This significant increase in enrollment indicates increased diversity of students and student academic abilities. The increased diversity of students required teachers to possess more strategies and, in turn, created a need for more professional development (Biennial Survey of Education in the United States; Tyack, 1967). Diversity continues to be an important characteristic of public schools as indicated by government reports such as *Achieving the Goals*, published by the U.S. Department of Education in 1997 and *The Benefit of Racial and Ethnic Diversity in Elementary and Secondary Schools*, published by the U. S. Commission on Civil Rights (Marcus, 2006; Office of Elementary and Secondary Education, 1998).

Second, while the Committee of Ten called for uniform curriculum for secondary schools to prepare students for college, the Smith and Hughes Act of 1917, in contrast, called for secondary schools to provide vocational training in order for secondary school graduates to acquire the necessary skills to be employable upon graduation (Tyack, 1967; Valentine, 1946). Secondary schools had dual purposes that matched the needs of the changing society: The schools should prepare those who wished to continue on to college, yet it should also train those who wished to begin work in a vocation upon graduation (Tyack, 1967). These two objectives required secondary schools to become more comprehensive in their purpose, which necessitated more training for teachers.

Third, the Progressive Education Association, which was formally created in 1919, caused much debate over pedagogy and curriculum. The progressives, such as Dewey, Parker and Cubberley, called for teachers to be guides not taskmasters. Ideally, for the progressives, the class size should be small. Also, the progressive educators preached that students should be active in their learning unlike in the traditional school setting where students sat passively in rows receiving and transmitting information (Tyack, 1967). Dewey recognized that for teachers to carry out the progressive vision through other methods of instruction such as inquiry versus direct instruction required great skill and knowledge (Tyack, 1967). Again, these changes required more professional development for teachers.

Beginning in the late 1950s and continuing to the present, government groups have caused changes in secondary schools. In 1957, the Soviet's launched the Sputnik satellite, which partially motivated the federal government to make education a national



issue, resulting in the passage of the National Defense Education Act (NDEA). The NDEA increased funding for scientific research and science education (Cavanagh, 2007; Eisner, 1992; Kubota, 1997; Sass, 2008). Furthermore, the pedagogy used to teach science changed as the demand for improved methods of teaching students increased following the launch of Sputnik. Educators moved away from using textbooks and lectures as the only method of instruction. In the early 1960s, science teachers began to use more hands-on approaches to teach science. This change or improvement of pedagogy required more teacher training, some of which was made available through the funds by the NDEA (Cavanagh, 2007; Eisner, 1992; Kubota, 1997).

Also in the early 1960s, Samuel Kirk introduced a definition of learning disability, and the Association for Children with Learning Disabilities was created in 1964. The association is now called the Learning Disabilities Association of America (Sass, 2008). In the same arena, the Elementary and Secondary Education Act (ESEA) was passed on April 9, 1965. This act provided funding to help low-income students, as well as providing funding to states in general, which ultimately resulted in the Title I and II program. The ESEA legislation was one component of Lyndon B. Johnson's "Great Society" platform (Cross, 2004; The Elementary and Secondary Education Act of 1965: From the War on Poverty to No Child Left Behind, 2007; Sass, 2008). Later in the decade, in 1969, the Learning Disabilities Act was signed into law. Another piece of federal legislation that had important effects on the American Public Education System was the Education For All Handicapped Children Act of 1975 which was signed by President Gerald Ford (Education for All Handicapped Children Act of 1975, 1975).

This act is also known as Public Law 94-142. This legislation also supported the demand for effective teacher professional development.

Previous to this legislation, states and their governing Boards of Education could exclude school-age students from receiving free public education. The decisions from two federal court cases provided legal foundation for the 1975 act. First, in October of 1971, a federal district court in Pennsylvania decided in favor of the Pennsylvania Association for Retarded Children over the Commonwealth of Pennsylvania and its Board of Education. The Board of Education was ordered not to deny a free public program of education to any mentally retarded student. Furthermore, the Board of Education was to provide a free public program of education that was appropriate to the child's capabilities (334 F. Supp. 1257, 1971). Second, a related case between seven children and the Board of Education of the District of Columbia was decided in August of 1972. The seven children had been denied publicly supported education by being excluded from their neighborhood schools. Again, the federal district court ruled in favor of the children. The basis of the decision fell on the fact that the Board of Education had not provided the students with due process in removing the students from their schools. The court ordered the Board of Education to re-enroll the students and to provide a publicly supported educational program suited to the children's needs. Also, the court extended the order to other exceptional students beyond those seven named in the case (348 F. Supp. 866, 1972). These court decisions provided a legal foundation that all handicapped children have rights to free public education and that the educational program is appropriate for their abilities. This provided the foundation for the Education

For All Handicapped Children Act of 1975 (EAHC), which guaranteed a free and appropriate public education to each child with a disability in every state and locality across the country (History: Twenty-five years of Progress in Educating Children with Disabilities Through IDEA, 2000; Schaeffer, 2002). The act also provided federal assistance to the states and local school districts to support the publicly funded educational programs. Finally, the act provided rights and protections for the children with disabilities and their parents as they progressed through the education program. The EAHC was reauthorized in 1997 as the Individuals with Disabilities Education Act and again in 2004 as the Individuals with Disabilities Education Improvement Act (History: Twenty-five years of Progress in Educating Children with Disabilities Through IDEA, 2000).

The original legislation and the reauthorizations demonstrate the need for teachers to provide individualized instruction to a wide variety of learners. This strategy requires teachers to have effective professional development experiences so the teachers have the opportunity to construct knowledge in order to provide the individualized instruction. Therefore, this legislation is relevant to the current study as the current study calls for the investigation of effective professional development and the relationships with teacher job satisfaction and teacher working conditions.

Each of these acts, which call for services for learning disabled students, mandated explicitly that teachers be prepared to provide the necessary services. The passing of these acts demonstrates the continuing changes that occur in schools to provide public education to our students and the necessity to train the teachers.

The NDEA of 1958, the Elementary and Secondary Education Act of 1964, the Learning Disabilities Act of 1969, Education for All Handicapped Children Act of 1975, The NCLB 2001 and the IDEA of 2004, like the Smith and Hughes Act of 1917, are evidence that the federal government has taken steps to change the landscape of secondary education in America. Also, reports on the need for teacher professional development continue to be published, reports which began with the 1983 *A Nation At Risk* and include the 2007 National Science Foundation publication titled *A National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System*.

These foundational changes and events, spanning 100 years, document the continuous need for professional development for teachers. Since the need for professional development of teachers will always exist, it is important that school leaders are well informed with regard to characteristics of effective professional development and other related variables.

### Brief History of the Development and Implications of Teacher Professional Development

In an 1823 pamphlet entitled *Suggestions on Education*, written with the support of Professor James L. Kingsley of Yale University, William Russell recommends that the defects in instruction within public schools could be solved through teacher training. Professor Kingsley recommends forming teacher training schools, which in time would become known as the “normal schools.” Originating in France, the “normal school,” sought to train teachers to perform according to “norms” or high standards (O'Connor,

1995). After a young student at the age of thirteen or fourteen completed his work at the elementary school or “common school,” as it was called at that time, he would then attend a normal school. The typical age of these students enrolled in the early normal schools ranged from 14 to 17 years old (Angus, 2001; Richey, 1957). The early normal schools were vocational schools for training common school graduates to be teachers. These teachers in training would attend these schools instead of secondary schools (O'Connor, 1995; Tyack, 1967). In a normal school, the aspiring teacher completed classes that reviewed the subjects to be taught in the common schools. The level of education of a normal school fell between that of the common school and the university (Learned & Bagley, 1920; Tyack, 1967). The early state normal schools first began at Lexington, Massachusetts in 1839 (Tyack, 1967). In 1920, Learned and Bagley indicated that public schools did not provide an appropriate level of quality instruction for the children of America. At that time, many public school teachers had not completed high school (Richey, 1957). In the same report, Learned and Bagley outlined a strategic plan for a state-operated normal school. It is interesting to note the outline refers to the quality of instruction that the teachers in training would receive from the instructors at the normal school. An item from the outline explains that a veteran teacher would oversee methods used by the pre-service teachers and offer criticism in order to ensure that a standard of quality of instruction was met. The report included a description of the work of a veteran teacher, thus providing evidence that policymakers of the early twentieth century were concerned about the quality of instruction that pre-service teachers received (Learned & Bagley, 1920; Tyack, 1967).

Back to the second half of the 19<sup>th</sup> century: the normal schools began to develop into teacher colleges or part of state universities. This development was initiated by differences in the normal schools based on the regions where the school existed. The normal schools in the eastern states of the United States were created first. As mentioned earlier, these normal schools had students who had recently completed work at the common schools. Also, the curriculum of the eastern normal schools involved review of the curriculum of the common schools (Angus, 2001; Richey, 1957). In contrast, the normal schools located in the western states were created within the programs of the colleges. These normal schools that were connected with existing colleges admitted students who had completed some secondary education; therefore, the students were slightly older and better prepared, educationally, than those students attending the eastern normal schools (Angus, 2001; Valentine, 1946). The normal schools in the eastern states evolved to be more similar to the normal schools in the western states. By the end of the nineteenth century, the normal schools had become part of schools of education within colleges or universities (Angus, 2001; Tyack, 1967). The teacher college's curriculum included "general education, professional study, specialization in subject areas, and extended practice in teaching" (Richey, 1957 p. 43). A few examples are St. Paul City Normal in St. Paul, Minnesota, known as The Teachers' Training School, which was founded in 1890 (Saint Paul's College: History of the College). Also, Illinois State University in Normal, Illinois was founded in 1857 as the first public institution of higher education in the state, and it was established as a teacher education institution (A Brief History of Illinois State, 2007).

The next significant advancement for professional development of teachers was The Teachers' Institute. The Teachers' Institutes were held throughout the country at the end of the nineteenth century and continued into the first quarter of the twentieth century (Spearman, 2004; Taggart, 2003). Counties in many states sponsored the week-long institutes for their teachers (Richey, 1957). These county-sponsored programs were held in Houston, Chicago, and the state of Delaware. *The Fifty-Sixth Yearbook of the National Society for the Study of Education*, published in 1957, reports that the need to improve teacher content knowledge dates back to the 19<sup>th</sup> century. Few of the first teachers who attended The Teachers' Institute at the turn of the century had a secondary education. Most of the teachers at this time were trained in the normal schools, which were considered second-rate as compared to the secondary schools at the turn of the nineteenth century. As mentioned above, the normal schools were vocational schools for teachers while the secondary schools of the time were highly academic and had as their main purpose to prepare the successful students for college (Valentine, 1946).

The public school teachers were in great need of training in grammar, arithmetic or reading, and pedagogy (Richey, 1957; Tyack, 1967). Richey (1957) reported that The Teachers' Institute was created to offer a regional solution to meet the demand for professional development. In the 1890s, the classes offered by The Teachers' Institute were much like the classes that the teachers themselves were teaching to their own students at the time. A typical classroom in The Teachers' Institute employed direct instruction by a veteran teacher who taught grammar, arithmetic or reading (Tyack, 1967). Relatively speaking, the classes were very valuable because any training on a

subject area that a teacher received was better than no training at all. The program was created in the last decades of the nineteenth century and carried over to the first three decades of the twentieth century. By 1910, most states made high school graduation a minimum requirement for an individual who was to become a public school teacher (Richey, 1957). Also, in the last half of the nineteenth century and first three decades of the twentieth century, the normal schools developed and improved concurrently with The Teachers' Institute, and the teachers who graduated from the normal schools received subject matter knowledge prior to the start of their teaching careers. During the 1930s, the proportion of states that adopted the prerequisite of some college level work for minimum certification for teachers increased to three-fourths. Also during this time, the normal schools had progressed to making high school graduation a prerequisite for admission. The normal schools, which had previously accepted graduates of common (elementary) schools and trained them to be young teachers, had progressed into teacher colleges. The teacher college's curriculum included "general education, professional study, specialization in subject areas, and extended practice in teaching" (Richey, 1957, p. 43). The teachers who graduated from the normal schools that had developed into teacher colleges were more competent and advanced as compared to those teachers who graduated the normal schools of the east coast. The lessons from The Teachers' Institute were less and less useful for the more competent and advance teachers with teacher-college training. The Teachers' Institute had become outdated and failed to meet the needs of the college-trained teachers. The teachers' pre-service education from the normal schools had improved and surpassed the function of the institute. As a result, the



negative connotations that exist today regarding teacher professional development could be attributed to The Teachers' Institute because the program did not evolve along with the dynamics of public education (Guskey, 1986). For example, John T. McManis refers to the institute as a "fossil" as early as 1903 in "The Problems of the Institute" in which he states "the lecturer talked on pedagogical principles but violated all the canons of modern education, in which the lecturer preached activity but assumed a strictly passive set of individuals to teach" (see Richey, 1957, p. 44). As a result, The Teachers' Institute did not adapt to the demand of teaching development, and it eventually fell out of favor as a productive professional development program (Angus, 2001; McManis, 1903; Richey, 1957). In addition, as The Teachers' Institutes were controlled by local educational bodies and not by the schools of education of universities or state-operated normal schools, The Teachers' Institutes threatened the professionalism of the field of education (Angus, 2001).

By the 1930s, as more public school teachers received significant training from the normal schools, which were part of the teacher colleges, the demand for professional development for teachers with a number of years of experience called for a new type of program. As mentioned previously, The Teachers' Institute offered courses to these experienced teachers in their subject area. However, these courses repeated material from the normal schools, so for experienced teachers who graduated from the normal schools, the curriculum from The Teachers' Institute was repetitive and ineffective (Richey 1957). Summer sessions offered at colleges and universities provided an alternative means of professional development. Prior to 1900, only three schools offered

summer sessions to teachers. By 1910, summer normal schools were legally established in fourteen states (Richey, 1957). The summer sessions gave teachers the opportunity to do college work, which was an extension of their previous education. In addition to instruction in subject areas, summer sessions provided courses on methodology, as well (Richey, 1957).

As the changes occur in education and in our society in general, teacher development must also change (Department of Education, 2000; National Commission on Teaching and America's Future, 1996; Richey, 1957). "The history of in-service teacher education must be viewed against the background of changing educational theories and practices that developed in response to or in conjunction with the changes that occurred in the aspirations of the American people and in the conditions of their social, political, economic, and intellectual life" (Richey, 1957, p. 64). The rise and fall of The Teachers' Institute demonstrates that the characteristics of a professional development program should change as the educational needs of the American people change. The change of educational environment is inevitable. In the current climate, standards-based curriculum is replacing textbook-based curriculum, which creates a demand for more professional development of teachers (Goldsmith & Mark, 1999).

An important aspect of the history of teacher professional development through the country is that there has not been uniformity as professional development programs were designed from state to state in various ways. Differences in quality of professional development programs provided at the state level reflected each state's ability to afford professional development programs (Richey, 1957). In addition, the structure of a state's

educational system affects that state's ability to provide professional development. Also, differences in professional development experience arose from the various school environments such as those servicing rural versus urban communities. The needs of urban versus rural schools were very different; therefore, the professional development needs of teachers were very different. Other factors that have influenced the advancement of "in-service education," as it was referred to in the 19<sup>th</sup> century, include, but are not limited to, the following factors. First, changing concepts of the aims and values of education have caused educational theorists such as John Dewey, Ellwood Cubberley and Francis Parker to debate ideas of a progressive education versus a traditional education (Tyack, 1967). The creation of the Progressive Education Association in 1919 led to debates over the nature of the learner and learning (Sass, 2008). Traditionally, students sat in rows passively receiving and transmitting information. Progressivism proposed active learning through inquiry and problem solving (Tyack, 1967). Second, the function and purpose of school changed from the traditional concept of imposing skills onto the students to a more progressive approach of preparing "... the young for future responsibilities and for success in life" (Dewey, 1938, p. 43). A third factor of change was the role of the teacher as a task master, as defined by the traditional view, as opposed to a guide, as defined by the progressive view (Tyack, 1967). A fourth factor was the unprecedented growth of school enrollments and expanding heterogeneity of the school population affected the advancement of professional development. The enrollment in schools of children between the ages of 14 and 17 increased to over seven million in 1940 from 700,000 students in 1900. Finally,

the fifth factor was the diversity of those learners increased. Secondary schools in the first decade of the 20<sup>th</sup> century were generally college-preparatory schools where 10% of the children in the United States between the ages of 14 to 17 attended. The schools were designed for students to fail. The students who could not make the grade would drop out and not go to college. That result was acceptable for the secondary schools of the early twentieth century (Valentine, 1946). However, attendance to high schools was made compulsory by all states in 1918 (Sass, 2008). By the third decade of the 20<sup>th</sup> century, 73% of the children between the ages of 14 to 17 attended high school. The Passing of the Smith-Hughes Act of 1917, which called for vocational curriculum in high schools, led to a broader curriculum for high schools. Increased enrollment and expanded curriculum led to comprehensive American high schools with greater diversity of learners as compared to the college preparatory secondary schools of the first decade of the century (Tyack, 1967; Valentine, 1946). Again this diversity and change called for more professional development for the teachers in these schools (Richey, 1957).

Next, two significant factors affected American public education beginning in the second decade of the twentieth century. First, the Progressive Education Association (PEA) was organized in 1919 (Angus, 2001; Bullough, 2007; Cesar, 2006). Second, the supply of teachers changed from a shortage in the 1920's to an oversupply in the 1930's and then back to a shortage in the 1940's as a result of World War II (Angus, 2001; Cesar, 2006).

The PEA was formed to promote significant changes in public education in contrast to the traditional education, which was characterized by students passively

receiving information, recitation, and rote memorization of basic facts (Tyack, 1967).

The primary purpose of the PEA was to promote the educational theories of John Dewey and other educational leaders of the time, namely Ellwood Cubberley and Francis W. Parker.

The Progressive Education Movement was characterized by the major tenets of Dewey's educational theories. The first tenet called for education to be child centered. The child should be active in her learning (A Brief Overview of Progressive Education, 2002; Dewey, 1916, 1938; Schugurensky & Aguirre, 2005), in contrast to the traditional school philosophy where students sat in rows, passively receiving and transmitting information (Tyack, 1967). In addition, "[t]he traditional curriculum undoubtedly entailed rigid regimentation and a discipline that ignored the capacities and interests of child nature" (Dewey, 1938, p. 10). According to progressive education, the second tenet requires that the interests of the student should be a factor in determining the curriculum. The child would be more motivated to actively learn the curriculum if the child was interested in the curriculum. Also, the teacher is a guide to the curriculum versus the expert in the front of the classroom (Tyack, 1967). The PEA was most prominent in the 1930's, and the basic idea of a child-centered education with the teacher acting as a guide was becoming more common in schools (Schugurensky & Aguirre, 2005).

The greatest achievement of the PEA was the organization of the Eight-Year Study, which was conducted in thirty secondary schools from 1933 until 1941 (Bullough, 2007). The Eight-Year Study began with two goals: (a) "to establish a relationship between school and college that would permit and encourage reconstruction in the

secondary schools”; and (b) to “find through exploration and experimentation, how the high school in the United States can serve youth more effectively” (Aikin, 1942, p. 116, found in Bullough 2007). The Eight-Year Study was originally funded by the Carnegie Foundation and ultimately funded by the General Education Board (Bullough, 2007).

The Eight-Year Study’s second purpose produced its most meaningful results. Bullough (2007) comments that one of the important lessons learned in regard to school reform relates to professional development. He states, “powerful teacher education is more than a matter of learning about and practicing promising teaching techniques; it involves engagement in exploring, with others, pressing personal and professional problems and issues—the sorts of issues that now form the focus of the teacher-researcher movement” (p. 178). The resources given to the schools and teachers of the roughly thirty secondary schools involved in the study provided the environment for teachers to construct knowledge of high-quality instruction.

However, the PEA was not without its critics. Most critics held the beliefs that schools should teach basic skills to students and, that more structured curriculum and discipline were needed in schools. During the 1940’s and 1950’s, more conservatism reigned and “progressive education was widely repudiated, and it disintegrated as an identifiable movement” (A Brief Overview of Progressive Education, 2002; Schugurensky & Aguirre, 2005).

Ultimately, the PEA formally began in 1919 and had run its course by the 1950s. The association’s most concrete contribution to the field of education was the Eight-Year Study. In addition, many contemporary educational strategies have their roots connected

to the PEA. For example, schools without walls, cooperative learning, and numerous forms of alternative schools were founded on ideas related to the major tenets of the PEA (A Brief Overview of Progressive Education, 2002; Schugurensky & Aguirre, 2005).

Another significant factor that affected the American public education system relates to the teacher supply from the 1920's to the 1940's. Angus (2001) reports that a teacher shortage followed the First World War as many women left teaching positions to take more desirable jobs in other fields previously held by men who had gone into the armed forces. This shortage of teachers caused education systems to hire untrained individuals. After the war, teacher salaries were increased to recruit qualified individuals back to the teaching profession. Inevitably, the increased salaries led to a surplus of teachers in the field by the 1930's (Angus, 2001; Cesar, 2006). With a surplus of teachers available to schools, the schools could be more selective of the teachers they hired. Accordingly, more teachers earned bachelors degrees from universities to make themselves more desirable to the schools. By the 1930's, 150 teacher colleges had become absorbed by the schools of education in the universities. More teachers had completed bachelors' degrees from the teacher colleges that had become part of the universities. Also, three-fourths of the states required an individual to have completed at least some college work to receive a state teaching certificate (Richey, 1957). Further evidence of increased training of teachers is demonstrated by the information that in 1921, 30 states had no minimum requirement for prior schooling for a person to qualify to be a teacher. The total number of states had decreased to 12 by 1930. Also, in 1930, 31 states required a person to complete high school to qualify to be a teacher. "By 1937,

five states required for their initial certificate four years of college, eight required three years of college or normal school, 11 required two years of college or normal school, including some professional courses, eight states required one year and two states required high school graduation and some professional preparation”(Angus, 2001, pp. 17-18). Finally, in 1937, 41 states had a state-controlled certification system, whereas in 1911 only 15 states had a system to offer teacher certificates (Angus, 2001).

Unfortunately, the trend of an abundance of teachers that resulted in higher qualifications for teacher certifications receded in the first years of the 1940’s as the United States went to its Second World War. Men joined the armed forces, and again women left teaching positions to fill the more desirable jobs previously held by men (Angus, 2001). The salaries for teachers could not compete with the salaries offered to positions directly related to the war efforts (Angus, 2001). The solution for states that required certificates during the time of this shortage was to offer emergency certificates.

Although the number of emergency certificates issued increased from 2,305 in 1940-1941 to 69,423 in 1943-1944, the shortage of teachers continued to last into the 1950’s. The standards for state certificates also increased as 25 states required a four-year bachelors degree (Angus, 2001).

Moving from the 1940’s to the 1950’s, federal legislation instituted new changes for professional development. Three pieces of legislation provided monies for school districts to pay for professional development experiences for teachers. In 1958, the National Defense and Education Act (NDEA) passed. The passage of the NDEA was partially motivated by the success of the Soviet’s Sputnik satellite by making education a



national issue. The NDEA increased funding for scientific research and science education (Cavanagh, 2007; Eisner, 1992; Kubota, 1997; Sass, 2008). In 1965, the Elementary and Secondary Education Act (ESEA) led to the creation of the Title I and Title II grant programs (Cross, 2004). These programs provided funding to help low-income students and the states that educated them. The ESEA legislation was one component of Lyndon B. Johnson's "Great Society" platform (Cross, 2004; The Elementary and Secondary Education Act of 1965: From the War on Poverty to No Child Left Behind, 2007; Sass, 2008). Next, in 1969, Congress passed the Learning Disabilities Act, which provided public schools with funding to provide services to students with learning disabilities along with money to train teachers to teach these students (Cross, 2004).

During the 1970's through the 1990's, teacher professional development progressed through three eras. According to Killion, the Director of Special Projects for the NSDC, beginning in the 1970's, staff developers worked as trainers and coordinators in the delivery of the workshops and conferences. Then "[i]n the mid 1980s, the focus of staff developers' work reflected the movement toward organizational development, school improvement, and systemic change" (Killion & Harrison, 1997, p. 33). The staff developers became facilitators of the programs along with the role of a trainer. The 1990s brought the concept of the "learning organization" from Peter Senge's *The Fifth Discipline: The Art and Practice of the Learning Organization* and "Professional Learning Communities" from Richard DuFour (DuFour & Eaker, 1998; Senge, 1990). The concept of a professional development program has expanded from the one-day

workshop presented to all teachers of a school on an institute day into a system-wide strategic plan that spans a number of years with many different strategies (DuFour & Eaker, 1998; Sparks & Loucks-Horsley, 1990). Professional development has become extremely complex over the past 25 years. That complexity is a reasonable response since the issue of educating students in the 21<sup>st</sup> century is also a very complex task.

Another facet to the history of professional development in education is the prejudice that experienced teachers exhibit toward professional development experiences. The current state of professional development exists because of past events and developments. Researchers have listed various features of past professional development experiences that provide evidence of why those experiences have not led to changes in classroom instruction. First, the workshops are short-term affairs where the participant is introduced to a pre-packaged, isolated strategy relating to classroom management, content knowledge, or pedagogical knowledge (Barton, 2005; Gibbons, Kimmel, & O'Shea, 1997). Second, sometimes the professional development experience is a requirement of the state or local education boards. Generally, these experiences consist of short-term sessions that are not connected to school curriculum, nor were they deeply rooted in the school's improvement plan. Cohen and Hill (2000) recommend that if the professional development experiences were more connected, then teachers would be more likely to use in the classroom the new knowledge gained in a professional development experience. Other researchers have recognized the discrepancy between knowledge gained from professional development experiences and subsequent changes in classroom practice (Hawley & Valli, 1999). This discrepancy causes both experienced

teachers and the public to question the usefulness of the professional development experiences. An additional problem of professional development experiences occurs when teachers are removed from the classroom and temporarily replaced with less qualified substitutes so teaching is left in the hands of less qualified individuals. Also, past reform efforts have failed, causing participants to question whether future reform efforts will be any different (Hawley & Valli, 1999). Fullan states that the experiences are frustrating for teachers and wasteful because the workshops have led to no significant changes in the classroom (Fullan, Stiegelbauer, & Fullan, 1991). Corcoran (1995a) adds that the conventional forms of professional development are a waste of time.

Furthermore, Guskey (1986) claims that most staff development efforts are ineffective for a variety of factors. Specifically, professional development programs fail because two critical factors are not considered. First, the program fails to consider the motivation of teachers who participate in professional development. Second, the program fails to consider the process of change for teachers. Professional development for teachers requires teachers to change their classroom practice and behaviors. Guskey writes that the professional development program must allow for teachers to complete these changes. Guskey adds that as the topic of professional development for teachers has become more prominent in the national debate, as demonstrated by the NCLB 2001, scrutiny of its effectiveness has increased. The history of its lack of effectiveness has led policymakers to demand for assurances that the quality of teaching will improve in the future (Guskey, 2003).

This completes the significant changes in American education specific to professional development of teachers. The following three sections report recent literature that demonstrates a need for effective professional development.

### Presenting a Recent Call for Professional Development

On January 8<sup>th</sup> 2002, President George Bush signed into law NCLB 2001, which is the current reincarnation of the Elementary and Secondary Education Act of 1965 (ESEA). As of 2010, President Obama and U.S. Secretary of Education Arne Duncan were gathering support for the reauthorization of the Elementary and Secondary Education Act of 1965. One of the most basic requirements of the act is to insure a highly qualified teacher in each classroom ("No Child Left Behind Act of 2001", 2001; Reeves, 2010)

Both the 1996 report *What Matters Most: Teaching for America's Future* and the 2007 report *National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics Education System* demonstrate the pressing need for highly qualified teachers. The 1996 report claims, "a caring, competent, and qualified teacher for every child is the most important ingredient in education reform..." (National Commission on Teaching and America's Future, 1996, p. 3). Also, the report includes a blueprint for strategies for recruiting, preparing and supporting excellent teachers in all of America's schools. The 2000 report from The National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century titled *Before It's Too Late* cites that "[...] the most direct route to improving mathematics and science achievement for all students is better mathematics and science teaching" (Department of Education, 2000, p. 7). The 2007 report reminds the United States Congress that we are facing a challenge

to ensure “an adequate supply of well-prepared and highly effective Science, Technology, Engineering and Mathematics (STEM) teachers” (National Science Foundation, 2007, p. 1).

Therefore, the need to improve teaching in the area of mathematics is not a new issue, but it remains a national issue. The federally sponsored reports recognize that teachers need help in order to improve their teaching practices in mathematics and science. It is now clear that “... [m]ost schools and teachers cannot produce the kind of learning demanded by the new reforms—not because they do not want to, but because they do not know how, and the systems in which they work do not support them in doing so” (National Commission on Teaching and America's Future, 1996, p. 5).

#### Timeline of the Demands for Improvement of Math Curriculum and Pedagogy

The following timeline provides evidence that the demand for improving the quality of instruction in the public school system is not a recent development. The strategy to improve the qualifications of teachers through professional development experiences is not new and has been ongoing for more than one hundred years (Cesar, 2006; Imig & Imig, 2006; McManis, 1903; National Commission on Excellence in Education, 1983; Richey, 1957). Finally, the timeline is not intended to be a complete list of the demands for improving instruction and teacher qualifications; however, it does present the time range of demands and recommendations from the influential literature that makes those demands.

Beginning in 1877, the lack of quality teachers in public schools resulted in degraded instruction and was a waste of the money paid to the teachers (Richey, 1957).

By 1920, Learned and Bagley argue that a teacher's work be judged by the growth of the pupils over time. A young teacher should be trained that the growth of the pupils is the most appropriate standard for measuring the teacher's success. This connection between teacher effectiveness and student growth provides the foundation for the "Adequate Yearly Progress" measurement from NCLB 2001 (Imig & Imig, 2006; No Child Left Behind Act of 2001, 2001). Anderson and Smith reported in 1955 that the most common forms of in-service education were workshops. Later, Richey (1957) reported that the workshops consisted of topics involved with the teachers' subject area and methods of instruction. These reports provide evidence that, at least as early as the mid 1950s, educational professionals were concerned about the quality of teachers' content knowledge and knowledge of pedagogy within specific content areas. If one jumps ahead in time, the 1983 government report *A Nation at Risk* (1983) comments that the improvement of teacher preparation programs is essential for educational success. The report provides a seven-part recommendation regarding the improvement of teaching. Recommendation D Teaching Item 3 states that "school boards should adopt an 11-month contract for teachers. This would ensure time for curriculum and professional development, programs for students with special needs, and a more adequate level of teacher compensation" (1983). This recommendation provides possible solutions to improve teacher education. In 1986, another government body published *A Nation Prepared: Teachers of the 21<sup>st</sup> Century*. The report recommended that university schools of education develop a new professional curriculum that would focus on a systematic knowledge of teaching, would include internships and residencies in schools, and

culminate in a Masters degree in Teaching. Also, The National Board for Professional Teaching Standards was created in 1987 based on the recommendation in that report (Carnegie Corp. of New York, 1986; Carnegie Results, 2003). This report gives more specific solutions and provides the most formal method to date for defining quality of teachers. Congress passed further legislation in 1994 in the form of The Goals 2000 Educate America Act, which was sponsored by the National Education Goals Panel and signed into law by President Clinton (Goals 2000 Legislation and Related Items, 2005). According to the Panel, “the nation’s teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the next century” (National Education Goals Panel W., 1995, p. 2). At this point, the federal government began to pass laws that provide for improving the nation’s teaching and instruction. In the eleven years since, *A Nation at Risk* was published, and the federal government’s involvement progressed from reports stating that teacher preparation programs need substantial improvement to laws mandating support for the continued improvement of teachers’ professional skills.

In 1996, another group of education and government leaders produced *What Matters Most: Teaching for America’s Future*. This report lists five recommendations to improve the state of the American public education system. The second recommendation directly relates to this timeline; that is to reinvent teacher preparation and professional development. The recommendation was designed to help the nation meet its third goal by 2006, and it states that “all teachers will have access to high quality professional

development and regular time for collegial work and planning” (National Commission on Teaching and America's Future, 1996, p. 63). By 1999, the federal government reports became more and more specific about recommendations for improving the public education system. *Before It's Too Late*, published by the National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century, argues for the need to “establish an ongoing system to improve the quality of mathematics and science teaching in grades K-12 [...] The place to begin improving mathematics and science teaching is with a system that promotes high-quality professional development opportunities for all teachers” (Department of Education, 2000, p. 25). Since the turn of the twenty-first century, the federal government has published at least one report that explicitly calls for high-quality professional development opportunities. In 2000, Sparks and Hirsh, both from the NSDC, issued *Strengthening Professional Development: A National Strategy*, in which they call for more investment in professional development for teachers as it is clearly linked to increasing student achievement. Sparks, the executive director of the NSDC, the nation's largest nonprofit professional association committed to educational staff development, states that “the potential of professional development to improve student achievement is so great that we cannot afford continued complacency toward the status quo. Instead, we need a plan to improve professional development that works on the national, state, and local levels” (Sparks & Hirsh, 2000, p. 44). Sparks and Hirsch thus reiterate the longstanding need for the professional development of teachers. On January 8, 2002, the federal government passed the NCLB 2001, which continued the call for highly qualified teachers in every classroom. One purpose of the legislation was to



provide grants to state and local education agencies to increase student academic achievement through strategies such as improving teacher quality (No Child Left Behind Act of 2001, 2001, p. 1620).

In 2007, the National Science Board expressed the need for effective teachers in the report entitled *The National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering and Mathematics Education System*. The document's executive summary presents a challenge relevant to the present study: that is to ensure an adequate supply of well-prepared and highly effective STEM teachers. Also, the report recommends actions that support "preparing STEM teachers to teach STEM content effectively" (National Science Foundation, 2007, p. 10). On August 9, 2007, President George Bush signed into law The America Creating Opportunities to Meaningfully Promote Excellence in Technology Education and Science Act (COMPETES). The COMPETES Act provides funding for mathematics and science teachers of elementary through secondary students to receive support to implement programs using best practices and in-service training relating to those practices (The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (COMPETES), 2007; Fact Sheet: America Competes Act of 2007, 2007).

This timeline of literature provides evidence that the nation's educational and government leaders are concerned about the quality of instruction and teacher quality in the subject area of mathematics. The leaders have proposed solutions to improve the quality of instruction, and federal legislation has allocated funds for programs to improve the quality of instruction. Thus, it is necessary to understand the characteristics of

professional development programs that will make such programs effective. This literature demonstrates a need for effective professional development of secondary mathematics teachers. Ultimately, the goal of teacher professional development is to improve student achievement. Unfortunately, there exist many variables, factors, and relationships between professional development and student achievement. The current study has a narrow focus on the teacher-related aspects of the relationship. The researcher hypothesizes that teachers associate job satisfaction and better working conditions with high quality professional development opportunities. It is plausible that teachers who report higher levels of job satisfaction perform their jobs better than those teachers who report lower levels of satisfaction (Hall, 2007; Turner, 2007). More detail from the literature regarding the interrelationships amongst teacher professional development, teacher job satisfaction, and teacher working conditions will be provided later in this literature review. However, the next section will provide more support for the need for more professional development for mathematics teachers.

#### Mathematics Curriculum Reform Creates a Demand for Professional Development

The following documents provide evidence of recent changes in mathematics curriculum in American schools. The reforms referred to in *What Matters Most: Teaching for America's Future* suggest the shift from traditional or textbook curriculum to a standards-based curriculum. In 2001, the National Council of Teachers of Mathematics published *Principles and Standards in School Mathematics*, which explains the standards-based curriculum for mathematics. The *Principles and Standards in School*

*Mathematics* provides the vision for mathematics curriculum. Next, educators in Illinois are subject to the Illinois State Board of Education *Common Core State Standards for Mathematics* (Common Core State Standards for Mathematics, 2010). The Common Core State Standards list skills that direct mathematics curriculum in Illinois public schools (Common Core State Standards for Mathematics, 2010). These three documents show that content of mathematics courses in our schools today is no longer determined by the content of textbooks; it is recommended by the mathematics standards (Kubota, 1997; Schifter, 1998).

The difference between the traditional mathematics curriculum and the more recent standards-based curriculum is that “traditional mathematics education focuses on memorization, rote learning and application of facts and procedures, the standards-based approach emphasizes the development of conceptual understanding and reasoning” (Goldsmith & Mark, 1999, p. 40). Also, the shift in curriculum has caused a shift in pedagogy. The methods of direct instruction, drill, and practice have given way to more active student engagement involving collaborative investigation and hands-on exploration (Goldsmith & Mark, 1999; Kubota, 1997).

It was mentioned in an earlier section of this study that, additional changes from traditional curriculum in mathematics include: teaching for understanding, application of knowledge across subjects, collaboration among learners, and alternative assessments. All of these changes require teachers to learn new practices in order to implement the features of the standards-based curriculum (Cohen, McLaughlin, & Talbert, 1993; Little, 1993; Loucks-Horsley et al., 1998). Also, *Before It's Too Late* (2000) suggests that “the

most direct route to improving mathematics and science achievement for all students is better mathematics and science teaching” (p. 7).

Therefore, the call to improve teaching in the area of mathematics has been a national issue for decades. Cohen and Hill (2000) completed a study in California where statewide initiatives set the agenda for reform in elementary mathematics. Cohen and Hill argue that “reformers argue that new assessments, or instructional frameworks or professional development, or some combination of them, would do the trick, but such things are unprecedented in the United States” (p. 295). Further, the same study states that the dramatically new curriculum required by the policymakers in California could not be enacted unless the teachers had many opportunities to learn new conceptions of mathematics teaching and learning (Cohen & Hill, 2000). Not surprisingly, the study discovered that the first conjecture was true: When a teacher receives greater opportunities to learn new mathematics and how to teach it, the more the teacher’s classroom instruction will align with the state policy that proposed it. When opportunities for professional development for teachers are specific to topics of the curriculum, and sufficient time is spent learning, then the classroom practices will change in an appropriate manner (Cohen & Hill, 2000).

The researcher believes that the current secondary mathematics education offered in Lake County, Illinois is sufficiently different from the programs offered in California in 1994 and that a study specific to Lake County, Illinois secondary schools is appropriate to complete. First, the state of Illinois is different from many states in that it has a list of state standards; however, a statewide plan of implementation of those

standards does not currently exist. Also, the Illinois State Board of Education does not provide a statewide program of professional development for teachers (Editorial Projects in Education Research Center, 2008). Accordingly, there is no vehicle to provide finances for statewide professional development for teachers. Finally, the Illinois State Board of Education does not require time set-aside in the teachers' schedules for professional development (Editorial Projects in Education Research Center, 2008). Without these statewide supports, each individual district is left to design its own programs. So this present study was completed, not at the statewide level, but at the district or school level each program varies from district to district. The scope of this study was limited to Lake County, Illinois secondary schools in order to learn which characteristics of effective professional development are present in the current professional development experiences for teachers and what level of job satisfaction these teachers report.

Recent national reports suggest that the teaching of math and science needs to be improved. For example, the National Mathematics Advisory Panel was created within the U.S. Department of Education to advise the president on addressing the nation's "concerns of national policy relating to mathematics education" (U.S. Department of Education, 2008, p. xii). "Th(e) Panel, diverse in experience, expertise, and philosophy, agrees broadly that the delivery system in mathematics education—the system that translates mathematical knowledge into value and ability for the next generation—is broken and must be fixed" (U.S. Department of Education, 2008, p. xiii). This comment combined with those made in the National Science Board's 2007 report entitled *The*

*National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering and Mathematics Education System* demonstrate the national concern for mathematics education. Along with the national reports, the National Center for Educational Statistics reported that more than 20% of students in their first year of college are forced to take remedial math classes because they were not prepared to take college-level courses (National Center of Education Statistics, 2003). Furthermore, the National Assessment of Educational Progress reported in the 2005 National Report Card that only twenty-three percent of twelfth graders were labeled as proficient in math (U. S. Department of Education, 2005).

The question that naturally arises from these reports is how to create a process that will improve the teaching of math and science. Darling-Hammond (1996) argues that “most schools and teachers cannot produce the kind of learning demanded by the new reforms, not because they do not want to, but because they do not know how and the systems they work in do not support their efforts to do so” (p. 5). Accordingly, improvements in the teaching of mathematics require teachers to receive professional development or staff development. Teachers need a clear vision of the shift in curriculum in order for the new curriculum to be implemented.

Furthermore, teachers need to make substantial changes in their teaching practice in order for the standards to cause the appropriate effect on student academic achievement. The changes in teacher practice will require teachers to learn and relearn the content of the curriculum and the strategies to teach the curriculum. Teachers will need multiple opportunities to learn in the proper environment for their practices to

change (Desimone et al., 2002; Garet et al., 2001; Sparks & Hirsh, 2000; Weiss et al., 2003). In order to continue with the investigation of professional development, it is appropriate to define more clearly what is meant by the term “teacher professional development.”

### Definition of Teacher Professional Development

It is important to begin to describe what professional development for teachers entails. The term “one-day workshop” does not provide a complete description of professional development experiences. This study looked much more deeply into professional development than the simple definitions provided by the literature. In fact, a large knowledge base of characteristics of effective professional development exists. However, it is important to mention some of the definitions of professional development provided in the literature.

Designing Professional Development for Teachers of Science and Mathematics by Loucks-Horsley et al. (1998) uses the term professional development of teachers to mean the opportunities offered to educators to develop new knowledge, skills, approaches and dispositions to improve their effectiveness in their classrooms. This definition begins to provide a description that expands beyond the one-day workshop. However, other authors will provide more specific terms. Also, it is useful to describe professional development for teachers by explaining what it is not. The NCLB 2001 specifically indicates that “professional development (is)... not (a) one-day or short-term workshop(s) or conference(s)” (No Child Left Behind Act of 2001, 2001, p. 1963). Furthermore, Abell and Lee (2008) indicate that professional development is for teachers

with teaching experience who would like to advance their curriculum and knowledge.

Teacher education is not the same as professional development because teacher education or pre-service education is intended for individuals who have not taught and are learning to teach.

In addition, it is commonly accepted that professional development and staff development are similar, but there are distinct differences. Loucks-Horsley et al. (1998) explains that one difference is that professional development provides for a “commitment to continuous learning” while the term *staff development* connotes a mandatory participation by employees (p. xiv). Also, an *in-service* day typically consists of one-day workshops of presentations for educators (Loucks-Horsley et al., 1998). The term *in-service* refers to the activities of a particular day, such as a presentation or activity that occurs in a short period, but is not connected to a broader program. Corcoran (1995a) explains that professional development is a much broader program that may include a variety of activities that affect how teachers learn to teach.

Also, according to Elmore (1997), a traditional definition of professional development is an activity or service that is provided to schools as one of a number of centrally organized administrative functions. Teachers are not expected to find their own professional development experiences. Professional development of teachers at a school should consist of a program that extends over time and is supported by the school’s administration. More recently, NCLB 2001 provides an extensive description of the term *professional development*. NCLB 2001 lists activities that are components of teacher professional development. The more prominent activities include improving and



increasing teachers' knowledge of the academic subjects that the teachers teach, which enables teachers to become highly qualified. Next, NCLB 2001 contends that teachers become highly qualified through professional development. Also, the NCLB 2001 supports Corcoran's (1995a) description of professional development as an important component of a school or district's overall improvement plan, making professional development a much broader and on-going process as compared to one-day workshops (No Child Left Behind Act of 2001, 2001).

Thus the various definitions of professional development found in the literature imply an ongoing process of developing opportunities or activities for the improvement of teacher qualifications. The qualifications relate specifically to knowledge in the teacher's content area. Also, there is an expectation that an relationship exists between a teacher's professional development and the teacher's practice in the classroom (Desimone et al., 2002; Elmore, 1997; Elmore, Peterson, & McCarthy, 1996; Guskey, 1986; Guskey & Sparks, 2002). Professional development activities provide teachers with a deeper knowledge of their content and the methods with which to teach it.

A summary of these descriptions from the literature provides a more complete definition of professional development for teachers. The definitions from NCLB 2001, Elmore and Desimone and others demand that professional development consists of programs designed at the organizational level to improve teachers' knowledge of their subjects and the pedagogy used to teach the curriculum (Desimone et al., 2002; Elmore, 1997; No Child Left Behind Act of 2001, 2001). The program is continuous and is a fundamental component of the organization. Desimone et al. (2002) argues "professional

development is considered an essential mechanism for deepening teachers' content knowledge and developing their teaching practice. As a result, professional development could be a cornerstone of systemic reform efforts designed to increase teachers' capacity to teach to high standards" (p. 81).

Finally, the NSDC has proposed a formal definition of professional development to be used in the reauthorization of the NCLB 2001. This formal definition provides a very complete description, including several characteristics of what the NSDC believes makes effective professional development (National Staff Development Council, 2008). The NSDC's definition states that professional development is a comprehensive, substantial and intense program, which improves teacher effectiveness in raising student achievement. It is a purpose of this study to investigate the many characteristics of effective professional development based on such definitions. The NSDC provides one list of many that can be found in the literature.

Ultimately, a definition for the variable *teacher professional development* is required for this study to quantify the relationship with the other variables of this study. The following definition includes some of the descriptions previously provided. Also, the variable is directly related to the items of the online questionnaire that are used in quantifying the variable. For this study, the term *teacher professional development* is the mean of the sixteen items numbered 1-16 from the online questionnaire that explain the presence of an ongoing program offered to educators to develop new knowledge, skills, approaches and dispositions to improve their effectiveness in their classrooms (Elmore, 1997; Loucks-Horsley et al., 1998). This definition employs the descriptions of teacher

professional development that describe a long-term program in contrast to a one-day conference. Also, the definition connects the content of the professional development experience to classroom instruction. The overall objective of teacher professional development is to improve student academic achievement. It follows that classroom instruction is related to that improvement process.

The next section guides the third research question of the current study. Given the changes in pedagogy and curriculum in secondary mathematics called for by the National Council of Teachers of Mathematics and the Illinois State Board of Education, it is necessary to better understand the characteristics of professional development that could have the greatest impact on improving teacher job satisfaction (Common Core State Standards for Mathematics, 2010; National Council of Teachers of Mathematics, 1991). The next section will find the characteristics mentioned most frequently in the professional development literature. These characteristics of effective professional development were be used to provide a more enhanced investigation of the relationship between teacher professional development and teacher job satisfaction. The characteristics found most often in the literature were measured to find which characteristics have the strongest relationships with teacher job satisfaction.

#### Lists of Characteristics of Professional Development

The literature on professional development for teachers contains numerous lists of characteristics that a district's professional development program should have in order to be effective. The lists come from various sources and prominent researchers in the field. The compiled information has increased the knowledge base in significant ways. These

researchers include, but are not limited to Darling-Hammond and McLaughlin (1995), Loucks-Horsley et al. (1998), Corcoran (1995b), Sparks and Hirsh (2000), Little (1993), and Elmore (1997). Other lists are found in government-sponsored reports such as *Goals 2000: Reforming Education to Improve Student Achievement* (1998); *Revisioning Professional Development: What Learner-Centered Professional Development Looks Like* (2000); and *National Science Education Standards* (1996). Finally, more lists were created by education-related organizations such as the AFT and the National Council of Teachers of Mathematics (American Federation of Teachers, 2002; National Council of Teachers of Mathematics, 1991). This literature review has collected more than twenty lists on professional development for teachers. The lists from Loucks-Horsley et al. (1998) and Corcoran (1995b) are second-generation lists. Second generation lists are created by condensing previous lists and focusing on the characteristics that are supported in research as having positive effects on teacher practice or student academic outcomes (Guskey, 2003; Loucks-Horsley et al., 1998).

Thirteen of the lists were discovered in an analysis published by Guskey (2003) in an article titled *Analyzing Lists of the Characteristics of Effective Professional Development to Promote Visionary Leadership*. In the analysis, Guskey created a list of 21 common categories and then sorted the characteristics accordingly.

This literature review completed the same analysis, but with an expanded set of lists, in order to determine which are the most common characteristics mentioned in the literature. Also, the literature review matched the most commonly mentioned characteristics with those that are related to the social constructivist learning model. Two

of the overarching purposes of this study investigate the relationship between professional development, teacher job satisfaction, and teacher working conditions. The field of teacher professional development is very extensive. Therefore, it is important to narrow the focus of this study to the essential aspects of professional development. The analysis that follows provides support for narrowing the topic of professional development to the characteristics of professional development mentioned most frequently in the literature. The characteristics mentioned most frequently in the literature have been given priority based on the widespread acceptance they have received in the literature.

This study has added the following lists to the 13 analyzed by Guskey (2003):

- 1.) Little, J. W. (1993). *Teachers' professional development in a climate of educational reform*. New York: Columbia University, p. 10.
- 2.) Standards for Professional Development for Teachers of Science. (1996). National Science Education Standards.
- 3.) Elmore, R. F. (1997). *Investing in teacher learning: Staff development and instructional improvement in Community School District #2* (Report). New York: National Commission on Teaching & America's Future.
- 4.) Reys, B., Reys, R., Barnes, D., Beem, J., & Papick, I. (1997). Collaborative curriculum Investigation as a vehicle for teacher enhancement and mathematics curriculum reform. *School Science and Mathematics* 97, 253-259.

- 5.) Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational Researcher*, 15(5), 5-12.
- 6.) Sparks, D., & Hirsh, S. (2000). Strengthening professional development. *Education Week*, 19(37), 42.
- 7.) Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 76(8), 597.
- 8.) Clarke, D. (1994). Ten key principles from research for the professional development of mathematics teachers. In D. B. Aichele, A. F. Coxford, & National Council of Teachers of Mathematics, *Professional development for teachers of mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- 9.) Standards for the Professional Development of Teachers of Mathematics. (1991). Principles and Standards for School Mathematics. Retrieved November 4, 2007, from <http://my.nctm.org/standards/previous/profstds/index.htm>
- 10.) Hiebert, J. (1999). Relationships between research and the NCTM standards. *Journal for Research in Mathematics Education*, 30(1), 3-19.

This literature review uses the same twenty-one characteristics chosen in Guskey's (2003) article for two reasons: First, the 21 categories provide a broad range of descriptions. The range is broad enough to capture all characteristics mentioned in the literature. Second, choosing the 21 categories provides some consistency over time. The analysis of characteristics of effective professional development should have some

standard measurement, and it is reasonable to defer to Guskey given his expertise in the field. The 21 characteristics or principles are as follows:

- 1.) Enhance teachers' content and pedagogic knowledge;
- 2.) Provide educators with sufficient time and other resources;
- 3.) Promote collegiality and collaboration;
- 4.) Include procedures for evaluation;
- 5.) Align with other reform initiatives;
- 6.) Model high-quality instruction;
- 7.) Provide school or site based professional instruction;
- 8.) Build leadership capacity;
- 9.) Base programs on teachers' identified needs;
- 10.) Incorporate analyses of student learning data;
- 11.) Focus on individual and organization improvement;
- 12.) Include follow-up support;
- 13.) Continuous and incorporated into job;
- 14.) Help accommodate diversity and promote equity;
- 15.) Base on best available research evidence;
- 16.) Incorporate a variety of forms;
- 17.) Provide opportunities for theoretical understanding;
- 18.) Driven by an image of effective teaching and learning;
- 19.) Provide for different phases of change;
- 20.) Promote continuous inquiry and reflection; and

21.) Involve families and other stakeholders.

The following table shows the number of items from the various lists of characteristics of effective professional development that match Guskey's (2003) categories. The first column of numbers shows the number of characteristics from Guskey's research. The cells of the table that contain two numbers indicate that one list had two or more items that matched that category. For example, in the cell "Enhances teachers' content and pedagogic knowledge," the 14/12 indicates that 14 items from 12 different lists matched that category. The second column shows the items from the ten additional lists found in the literature. Finally, the third column shows the total number of times an item matches the category from all 23 lists.

Table 1

*Categories of Characteristics of Teacher Professional Development*

			Guskey List	Ten Additional Lists	Total
1.	Enhances teachers' content and pedagogic knowledge		14/12	9	23
2.	Provides sufficient time and other resources		11/10	3	14
3.	Promotes collegiality and collaboration		9	10	19
4.	Aligns with other reform initiatives		10/9	3	13
5.	Models high-quality instruction		8/7	5/4	13
6.	Driven by analyses of student learning data		7/6	5/4	12
7.	Includes procedures for evaluation		8	4	12
8.	Focuses on individual and organization improvement		6/5	5/4	11
9.	Is ongoing and job embedded		5	5	10



10.	Includes follow up support		5	4	9
11.	Is school or site based		6	2	8
12.	Based on teachers' identified needs		6	2	8
13.	Builds leadership capacity		4	4	8
14.	Promotes continuous inquiry and reflection		1	7/6	8
15.	Based on best available research evidence		4	2	6
16.	Provides for different phases of change		1	4/3	5
17.	Helps accommodate diversity and promote equity		2	1	3
18.	Takes a variety of forms		2	1	3
19.	Involves families and other stakeholders		1	2	3
20.	Provides opportunities for theoretical understanding		2	0	2
21.	Driven by an image of effective teaching and learning		1	0	1

A few details about the items that are in the lists deserve further clarification.

Some authors describe characteristics that match two or more of the 21 characteristics.

Therefore, one item from an author's list may appear more than once in the analysis.

Also, in the following paragraph Guskey (2003) describes the creation of the 21

characteristics and gives an analysis of the lists:

After collecting the lists, two colleagues and I analyzed the characteristics identified in each using standard content analysis procedures. This involved reading each list and grouping the noted characteristics or principles in broad, content-specific categories. Categories were labeled using general descriptors perceived by the reviews to capture the meaning

of the noted characteristic or principles. When disagreements about the classification of a characteristic on a particular list arose, the characteristic was reviewed, reexamined, and discussed until consensus among raters was reached. (p. 8)

The current study completed an analysis similar to the one described by Guskey (2003) on 23 lists that include 13 lists from Guskey's original analysis and the ten additional lists described in this current study.

The categories of characteristics mentioned most often appear near the top of the list. It should be noted that the second category, "Provides sufficient time and other resources," is only explicitly mentioned in thirteen of the lists, but it is implied in many others. For example, Elmore states, "successful professional development involves opportunities for observations, critique and reflection." However, in order to fulfill the opportunity, time is also required (Elmore, 1997). Also, all of the items in the category 'is ongoing and job embedded' also require time during the teacher's workday. Although there are only 14 items that explicitly call for providing sufficient time and other resources, there are numerous items that imply the need for teachers to receive time during their workday in order to experience effective professional development.

This study gives priority to those characteristics that are mentioned most often in the 23 lists and considers the characteristics that are similar to features of the social constructivist learning model. Using these two criteria, the present study creates a short list of the most important characteristics of effective professional development. It is

necessary to study the characteristics that should receive priority since it is not reasonable for a school district to create a professional development program that meets all the characteristics listed in the literature. For example, Guskey (2003) states that the lack of consensus of the lists must “frustrate and confuse those responsible for designing and implementing high-quality professional development programs for educators” (p. 5) .

It is useful to this current study to narrow the focus of professional development to the most essential features or characteristics in order to provide a more complete description of professional development. The previously completed analysis provides support for focusing on three of Guskey’s 21 categories. In the 13 lists that were analyzed in 2003, Guskey found that the most frequently mentioned characteristic was “enhancement of content and pedagogic knowledge.” Ten of the 13 lists contained the provision for sufficient time and other resources as essential to effective professional development experiences. And the third most commonly found characteristic pertains to collegiality and collaboration, which was found on nine of the 13 lists.

The order of the 21 characteristics in the table above is determined by the frequency that the characteristic occurs in Guskey’s 13 lists. The second column provides the frequency that the same 21 characteristics appear in the 10 additional lists found in the literature. The additional lists from the literature confirm Guskey’s observation that the three most frequently mentioned characteristics of effective professional development for teachers are that they (1) enhance teachers’ content and pedagogic knowledge, (2) provide sufficient time and other resources, and (3) promote collegiality and collaboration. The next four characteristics are mentioned in more than

half of the lists. These are that the programs (1) align with other reform initiatives, (2) model high-quality instruction, (3) are driven by analyses of student learning data, and (4) include procedures for evaluation.

As mentioned earlier, one of the purposes of this literature review is to relate the most frequently listed characteristics of effective professional development from the literature with the primary principles of adult learning. The researcher posits that these characteristics are related to the adult learning model. And in a more broad sense, the characteristics are related to the social constructivist learning model. More specifically, professional development ought to (1) enhance teachers' content and pedagogic knowledge, (2) provide sufficient time and other resources, and (3) promote collegiality and collaboration. Since it is adults who are learning in the experience, the design of a professional development experience should consider the principles of an adult learning model. The following section provides more information regarding the means by which teachers create new knowledge and professional development experiences.

#### The Commonalities of Adult Learning and Teacher Professional Development

Organizations such as the National Council of Teachers of Mathematics and Illinois State Board of Education guide curriculum and create mathematics standards at the national and state levels (Common Core State Standards for Mathematics, 2010; National Council of Teachers of Mathematics, 2000). These standards call for teachers to make changes to classroom instruction, curriculum, and pedagogy. It is reasonable to expect that the educational system, in which the teachers work, provides research-based

professional development experiences so teachers can learn to implement these changes in their classroom practice.

The National Council of Teachers of Mathematics describes the standards-based curriculum and pedagogy in the document *Principles and Standards in School Mathematics* in 2001. One principle called “The Learning Principle” recommends that the “(s)tudents must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge” (National Council of Teachers of Mathematics, 2000, p. 20). This principle addresses two of the four fundamental principles of constructivist learning: (1) the learner has prior knowledge; and (2) the learner actively constructs knowledge. Also, in a description of “The Learning Principle” found in the *Principles and Standards in School Mathematics*, the NCTM recommends social interaction amongst students to confirm and disprove student conjectures (National Council of Teachers of Mathematics, 2000). Again, the pedagogy recommended by the NCTM suggests features similar to the social constructivist learning model. The NCTM’s principles are calling for teachers to use constructivist strategies in classrooms to teach the new curricula.

The shift in curriculum caused a shift in pedagogy. The methods of direct instruction and drill and practice have given way to more active student engagement involving collaborative investigations, inquiry-based learning, and hands-on exploration (Berger, 1999; Goldsmith & Mark, 1999; Kubota, 1997). Corcoran (1995b) adds his support to the literature and notes a ...“shift from a behaviorist approach to teaching, in which students are relatively passive recipients of teacher-generated knowledge, to a

‘constructivist’ approach, in which students are more actively engaged in their own learning” (p. 6). All of these changes require teachers to learn new practices in order to implement the features of the standards-based curriculum (Applefield, Huber, & Moallem, 2000; Borasi & Fonzi, 2002; Cohen, McLaughlin, & Talbert, 1993; Loucks-Horsley et al., 1998). Teachers need to find their own meaning from these standards in a professional development experience. Specifically, secondary math teachers are pressured by the National Council of Teachers of Mathematics Standards to use new curriculum and pedagogy and even technology in their classroom practices (Department of Education, 2000; National Commission on Teaching and America's Future, 1996; National Council of Teachers of Mathematics, 1991; No Child Left Behind Act of 2001, 2001). For many teachers, this requires new understanding and learning of their content and pedagogy, which in turn requires professional development. If teachers are expected to use new strategies and methods to teach the new curriculum guided by the standards recommended by the NCTM, then the teachers must receive professional development experiences, which provide them the opportunities to learn these new strategies and methods (Borasi & Fonzi 2002; Simon 1994; Simon & Schifter 1991).

In order for teachers to move away from the direct instruction methods commonly used in secondary math classrooms in the past, it would advance teachers’ knowledge of social constructivist learning if the professional development opportunities that teacher experienced had similarities to the principles of the social constructivist learning model (Borasi & Fonzi, 2002; Little, 1993; Simon, 1994). Specifically, researchers call for instruction in classrooms to be guided by and aligned with a social constructivist learning

model (Applefield, Huber, & Moallem, 2000; Beswick, 2007; Manouchehri, 1997; Simon, 1994; Winitzky, Stoddart, & O'Keefe, 1992). Furthermore, before teachers change their beliefs in regard to students learning through constructivist activities, teachers themselves need to experience methods of teaching using a constructivist learning style (Friel & Bright, 1997). Little (1993) claims it is ill-advised to expect teachers to use constructivist pedagogy if they have never experienced constructivist teaching methods. The researcher of the current study posits that the professional development experiences that secondary mathematics teachers receive should consider the social constructivist learning model. Also, adult learning models should be considered along with the social constructivist learning model when designing teacher professional development programs.

The changes in teachers' practice mentioned above require teachers to learn, so it is necessary to provide teachers with a professional development experience with certain characteristics or features that foster such learning. The analysis of the lists of characteristics provides support for focusing on a few of the most frequently mentioned characteristics. Furthermore, professional development involves adults learning new skills and strategies. Therefore, to adequately describe the characteristics of effective professional development, it is necessary at this point to provide foundational support for professional development by describing an adult learning model and the social constructivist learning model. A brief description of these models allow for a more detailed understanding of the characteristics of professional development mentioned in the literature. Also, there are similarities between adult learning and social constructivist

learning. Next, the fundamental principles of the social constructivist learning model will be described.

The social constructivist learning model consists of four fundamental principles. These four principles are central to most constructivist models (Applefield, Huber, & Moallem, 2000). The first, the social constructivist learning model assumes the learner has prior knowledge of the subject (Applefield, Huber, & Moallem, 2000; Simon & Schifter, 1993; Von Glasersfeld, 1990; Winitzky, Stoddart, & O'Keefe, 1992). Manouchehri (1997) explains the second fundamental principle of the social constructivist learning model where learning is an active construction rather than passive absorption, and teaching as facilitation rather than transmission. The third fundamental principle is that learning and meaning making are social acts within a particular context (Applefield, Huber, & Moallem, 2000; Colburn, 2007; Garet et al., 2001; Hammett & Collins, 2002; Weiss et al., 2003; Winitzky, Stoddart, & O'Keefe, 1992). The fourth fundamental principle is that, to make learning meaningful, there needs to be an authentic learning task (Applefield, Huber, & Moallem, 2000). The researcher posits that this principle relates to the content specificity of the professional development experience. The objective of the professional development experience is closely related to teachers' daily work. Next, a brief description of an adult learning model is presented.

Knowles is given credit for the adult learning movement (Welch, 2004). He developed the concept of andragogy, which focuses on helping adults learn in contrast to helping children learn. Pedagogy is the art and science of teaching children. Andragogy is the art and science of helping adults learn (Knowles, Holton, & Swanson, 1998). The



theory of andragogy presents six core principles that enable those designing and conducting adult learning to build more effective learning processes for adults (Knowles, Holton, & Swanson, 1998). Other models for adult learning can be found with similar basic assumptions; however, they offer less description than Knowles (Ringler, 2004).

Knowles (1998) describes six principles of andragogy. First, adults need to know why they need to learn something new before undertaking to learn it. Second, the adults' self-concept is important in the learning process. Generally, adults recognize their responsibility to the learning process. Third, adults' prior experience is an important consideration. They have a great volume and quality of experiences that affect the learning process. Fourth, adult learning is dependent upon the individual's readiness to learn. The timing of the learning experience must coincide with the tasks that are to be completed. Next, the orientation of the learner is critical in Knowles' andragogy theory. Adults are life-centered or problem-centered. The adult is more likely to learn a new skill when the skill is connected with a problem in her life situations. This orientation contrasts to children's orientation. Generally, children are subject-centered, and they learn, for example, arithmetic, reading, writing, and geography. Finally, the last principle of the andragogical model is adult motivation. Adults are more likely to succeed in the learning process when the motivation to learn is more internal versus external rewards (Knowles, Holton, & Swanson, 1998). These six core principles begin to describe similarities between the adult learning model and the social constructivist learning model. First, in both models the learner's prior knowledge is an important factor in the learning process. Second, both models recommend that the learner be actively engaged in the

learning process. The learner is ready to participate in the learning process and is motivated to be an active participant. The final key similarity is that the problem or task to be studied must be authentic or directly connected to the adult's life situation (Knowles, Holton, & Swanson, 1998; Welch, 2004). These similarities between the adult learning model and the social constructivist learning model demonstrate that professional development experiences for secondary math teachers should consider the principles of these two models. The learners in a professional development experience meet the criteria of the two models. The learners are adults who have a need to learn new pedagogies and curriculum for their classrooms. The learners, as professionals, have a responsibility to stay current with development in their chosen field of work. These are factors that provide internal motivation for the adults to be actively engaged in the learning process. Therefore, there exists a need for the designers of the professional development to create experiences that align with these principles of the adult learning model, which has similarities to the social constructivist learning model. Furthermore, research has supported this notion that professional development experiences should align with the social constructivist learning model (Berger, 1999; Saxe, Gearhart, & Nasir, 2001).

The learner in the professional development experience is the teacher, knowledge construction requires the social interaction of people who share, compare, and debate the newly presented information of the professional development experience. This portion of the knowledge construction allows the learner to refine her own meanings and to assist others in making their own meanings (Applefield, Huber, & Moallem, 2000). The

researcher posits that the most frequently mentioned characteristics of effective professional development are similar to the social constructivist learning model. Thus, designers of professional development programs should consider these characteristics when creating programs.

Furthermore, adult learning models and social constructivist learning models have similar features. As mentioned previously, the social constructivist learning model assumes that the learner has prior knowledge of the subject being taught (Von Glasersfeld, 1990; Winitzky, Stoddart, & O'Keefe, 1992). This is a reasonable assumption since the learner, in this context, is an experienced secondary mathematics teacher. The teacher is receiving professional development experiences to improve her instructional practices. Second, knowledge construction is active and social, which requires teachers to work collaboratively (Beswick, 2007; Colburn, 2007; Manouchehri, 1997; Simon, 1994). Third, teachers need the necessary time to work in a community of similar teachers to create cognizant dissonance and then to discuss, share and reflect to resolve the dissonance (Hammett & Collins, 2002; Winitzky, Stoddart, & O'Keefe, 1992). All of the steps of the process require time and other resources in order for the teacher to build and internalize the knowledge of the professional development experience.

Professional development experiences provided to teachers should include the recommendations offered in the literature of the educational field. Numerous lists of characteristics of effective professional development have been created over many years and by various sources. The analysis completed previously of 23 of the lists of the

characteristics provides the organization for this knowledge base. These most frequently mentioned characteristics of effective professional development on these lists are as follows. First, the professional development experience enhances the teachers' content and pedagogic knowledge, or the experience is content specific for the teacher. Second, the professional development experience provides sufficient time and other resources. Third, the professional development experience promotes collegiality and collaboration. These three characteristics are similar to the features of the social constructivist learning model (Beswick, 2007; Colburn, 2007; Corcoran, 2007; Manouchehri, 1997; Simon, 1994).

This analysis finds that the characteristics of effective professional development mentioned most frequently are similar to the social constructivist learning model. Effective professional development should enhance the teachers' content and pedagogical knowledge, provide sufficient time and other resources, and promote collegiality and collaboration. In addition, it is a purpose of the current study to investigate the relationship between a teacher's reported level of job satisfaction and the perceived quality of professional development experiences that feature the previously mentioned characteristics.

### Teacher Job Satisfaction

One research question of this study investigates whether a relationship exists between the perceived quality of professional development a teacher receives and the teacher's satisfaction with her job. Given that purpose, it is necessary to review the current literature relevant to teacher job satisfaction. The review begins with a more

broad perspective of job satisfaction. Next, the review continues with a description of the underlying theories that are commonly used to describe the conceptual framework of studies relating to teacher job satisfaction (Huysman, 2007; Kaufman, 2004; Kris, 2004; Oliver, 2007; Turner, 2007). The two relevant theories include Maslow's Hierarchy of Needs (Maslow, 1954) and Herzberg's Two-Factor Motivational Theory (Herzberg, 1959). Next, various definitions of job satisfaction are described. Also, in order to investigate the relationship between a teacher's perceptions of the professional development received at her job and her job satisfaction, this study measured and collected data on teacher job satisfaction. This review of the literature has discovered a questionnaire that has been used in previous studies to measure teacher job satisfaction. Finally, a review of the recent studies that are relevant to the relationship between professional development and teacher job satisfaction is included.

Fundamentally, Maslow's Hierarchy of Needs (1954) is based upon a motivational theory of how humans work to satisfy needs. They are motivated by the lack of some feature in their lives. A human's most basic needs relate to physiological needs. Maslow explains that there is a primitive level of needs for the body such as maintaining water, sugar, and salt content in the blood. The theory claims these are very fundamental needs that must be satisfied prior to the human being having an appetite for satisfying a more complex need. As these primary needs are met, then more complex yet still basic needs such as eating, drinking, and sleeping can be addressed. Needs are addressed, as Maslow's theory explains, when "All capacities are put into the service of hunger satisfaction..." (p. 82). Once a human has satisfied her physiological needs, then

the theory states that she realizes a need for safety or security. Accordingly, the human uses all her capacity to find safety or security. This progression continues into three more complex needs, namely the need to belong or to be loved, the need for self-esteem, and finally the need for self-actualization. Maslow explains that the order of satisfaction of needs is important, but not rigid. He uses examples to explain exceptions to the hierarchy. The first example involves creative people who are less concerned about satisfying the physiological needs and use their capacities to satisfy the need for self-actualization. Other exceptions to the hierarchy are humans who have a great appetite to fulfill their self-esteem needs while forgoing their belongingness needs. And a third example of exceptions to the hierarchy occurs when courageous people put their lives in jeopardy for a significant cause or principle. Maslow uses the specific example of Galileo, whose safety and security needs were in jeopardy as he made claims of proving the universe was heliocentric. The hierarchy provides a model that is appropriate for most human situations, but Maslow allows for some rare exceptions. Also, Maslow assumes that humans have an innate desire to learn, and to be curious. Humans have the desire to know and to understand. His philosophy of man is humanistic. Maslow conceives of man as fundamentally different from animals. Humans have an inborn need to develop the possibilities of human personality. Maslow adds that culture and society are influences on the possibilities of the human personality, but he insists that the desire or need for self-actualization is innate (Madsen, 1974; Maslow, 1954). This assumption supports the explanation of the progression from satisfying the basic needs related to physiological condition, safety, and love to move to the higher more cerebral needs of

self-esteem and self-actualization. This component of Maslow's theory relates to this study as it provides an explanation for why teachers who pursue professional growth do so to satisfy a need for self-actualization. For instance, teachers will be motivated to participate in professional development experiences only after more basic needs are met. Whitehead (2006) found evidence that salary was a significant motivator for teachers to participate in professional development. Also, Hall's (2007) qualitative study of two school districts investigated the benefits of collaborative professional development activities that were built into the teachers' workday. The activities required teachers to work collaboratively with student data and student work. Student academic achievement showed improvement in these schools. Data collected from semi-formal interview protocols demonstrated that teachers built an environment of mutual respect and shared successful instructional strategies. The collaborative feature of the experience satisfied the teachers' need for belonging. Hall (2007) concludes that the teachers worked productively because of the collaborative feature and the professional development activities were offered during the school day. Furthermore, within the professional development experience, the teachers satisfied the higher ranking needs on Maslow's hierarchy after the teachers' more basic needs were met. Next, Herzberg, Mausner, and Snyderman (1959) create a bridge from Maslow's general work of human motivation to employee motivation. Herzberg, Mausner, and Snyderman (1959) completed a study that investigated the factors of employment and how those factors affect the employees' satisfaction with their jobs.

Herzberg, Mausner, and Snyderman (1959) conducted interviews with approximately 200 accountants and engineers. The interviews gathered data regarding factors of the subjects' jobs that related to their satisfaction or dissatisfaction with their current employment. Also, the researchers measured whether the factors occurred over a short period versus a long period of time and whether the positive or negative attitudes associated with the factor lasted for a long or short period of time. For example, an employee was recognized at a meeting for excellent performance. The factor of recognition occurred over a short period of time, the length of the meeting. However, the employee had a positive attitude about his work for an extended length of time because of the recognition. Herzberg, Mausner, and Snyderman used the interview data to find common factors that affected the employees' attitudes about their jobs. Also, the researchers divided the factors into two categories based on the length of time the factor affected the employees' attitudes about their jobs. Ultimately, Herzberg, Mausner, and Snyderman sorted the data to draw conclusions to explain factors of peoples' employment that relate to their feelings of satisfaction with their jobs. Also, the research investigated how a person's attitude about a job affects the person's performance related to the job. Finally, the study investigated differences of job satisfaction in regard to differences of employee's traits, such as years of experience or gender.

Herzberg, Mausner and Snyderman's (1959) study has had critics. There are two components of Herzberg's work that received criticism. First, Ewen (1964, 1966), and Vroom (1964) found evidence that contradicted one of the fundamental components. Herzberg's Two-Factor Motivational Theory is based on the idea that job satisfiers and



job dissatisfiers were not on opposite sides of the same spectrum. Herzberg claimed that a lack of factors termed motivators did not lead to dissatisfaction in the job. The lack of motivators in a job led to no satisfaction. Conversely, Herzberg explained that the hygiene factors either led to dissatisfaction or no dissatisfaction, but the hygiene factors did not lead to job satisfaction. Ewen (1964; Ewen, Hulin, Smith, & Locke, 1966) and Vroom (1964) disagreed and claimed that job satisfaction and job dissatisfaction were on opposite sides of the same spectrum. For instance, Ewen's work provided evidence that the salary an employee receives could lead to either satisfaction or dissatisfaction in the job. Behling, Labovitz, and Kosmo (1968) wrote that the differences between Herzberg's and Ewen's theories were a result of the methods that each researcher employed. Herzberg's methodology that collected critical incident interviews of employees supported Herzberg's Two-Factor Motivational Theory. A methodology using a unisolar analysis of factors found evidence that contradicted the Two-Factor Theory.

A second criticism of Herzberg, Mausner and Snyderman's (1959) study claims that the results are not generalizable from the original subject groups of accountants and engineers to other occupations. Given this criticism, Tutor (1986) conducted a study using Herzberg's methodology with teachers as the subjects. Tutor found a conflicting result as compared to Herzberg's results from the study of engineers and accountants; however, Tutor describes Herzberg's study as "classic study of motivation" (Bellott & Tutor, 1990). The conflict that Tutor's results found was related to the job factor of salary. In Tutor, the job factor of salary was connected to teachers' having positive attitudes about their jobs. In Herzberg, salary is categorized as a dissatisfier, which means

that the factor can only contribute to the employee's job dissatisfaction, and not to job satisfaction.

As mentioned previously, Herzberg, Mausner, and Snyderman's (1959) study is often used in the theoretical or conceptual framework for many studies investigating job satisfaction and motivation. No less than six current studies specific to teacher job satisfaction use Herzberg's Two-Factor Motivational Study. There is evidence in the current literature supporting Herzberg's Two-Factor Motivational Theory; however, the theory is not without its critics (Behling, Labovitz, & Kosmo, 1968; Ewen, 1964; Ewen, Hulin, Smith, & Locke, 1966; Huysman, 2007; Kaufman, 2004; Kris, 2004; Oliver, 2007; Turner, 2007; Vroom, 1964; Whitehead, 2006).

The following information provides a more detailed description of the factors of job satisfaction that Herzberg discovered in his 1959 study. The results of Herzberg's work that relate most to the current study is the discovery of fourteen factors of a job and how those factors affect an employee's attitude toward his job. Herzberg categorized the factors into two groups called satisfiers and dissatisfiers. Also, he referred to satisfiers as motivators and dissatisfiers were sometimes called hygienes. Herzberg defined satisfiers as "factors that would operate only to increase job satisfaction..." (p. 80) and dissatisfiers are those factors "... with the power only to decrease job satisfaction" (p. 80). The factors of a job that Herzberg categorized as satisfiers or motivators are (1) recognition; (2) achievement; (3) advancement; (4) possibility of growth; (5) responsibility; and (6) the work itself. The factors of a job that Herzberg categorized as dissatisfiers or hygienes are (1) salary; (2) interpersonal relationships; (3) supervision; (4) company policy and

administration; (5) working conditions; (6) factors in personal life; (7) status; and (8) job security. In an ironic way, Vroom (1964) who has a difference of opinion with Herzberg's Theory confirms the factors that Herzberg defines. Vroom published in 1964 a literature review of motivation and job satisfaction. The chapter titled "Determinants of Job Satisfaction" listed seven factors of job satisfaction, but these factors were not separated into satisfiers or dissatisfiers. Vroom argued that job dissatisfaction and satisfaction exist on opposite ends of the same spectrum. These factors could affect the employee's attitudes in either direction. The list included (1) the company and its management; (2) promotional opportunities; (3) content of the job; (4) supervision; (5) financial rewards; (6) working conditions; and (7) coworkers. For example, Vroom argued that the factor of financial reward could positively affect an employee's attitude toward her job if the reward was adequate or even excessive. In another employee, the lack of financial reward could lead to job dissatisfaction. In contrast to Herzberg, Mausner, and Snyderman (1959), who argued that a lack of financial reward could result in job dissatisfaction, but excessive financial reward would only lead to no dissatisfaction. The employee would not gain job satisfaction from only a high salary. However, an important result of comparing the two theories is that each of Vroom's factors is represented in Herzberg's list.

Finally, Herzberg, Mausner, and Snyderman (1959) described another difference in the two groups of factors. The factors that result in the employee having a positive attitude about his job relate to the doing of the job or to the content of the job. While the factors that are dissatisfiers relate to the context in which the job is done. Since

Herzberg's factors of satisfiers and dissatisfiers are not on opposite ends of a spectrum, the result related to the factors will be described in two parts.

Herzberg, Mausner, and Snyderman's (1959) most significant findings from interviews with over 200 subjects relate to the factors that are called satisfiers. The finding from the interviews with the accountants and engineers was that the most commonly mentioned factor positively related to attitudes toward a job was achievement. Herzberg defined achievement as "...successful completion of a job, solutions to problems, vindication and seeing the results of one's work" (p. 45). Another significant finding was that the employees reported positive attitudes about their jobs when recognition was combined with achievement. Next, Herzberg reported that the positive attitudes about a job resulting from achievement and recognition lasted for a short period of time. On the other hand, the three satisfiers--advancement, the work itself, and responsibility--were related to long-term positive effects on employee job satisfaction. Finally, the positive attitudes that lasted a longer time span had more effect on job performance.

The following comments are the results related to the dissatisfiers, which are relevant to the current study. Herzberg, Mausner, and Snyderman (1959) discovered that the engineers' and accountants' responses that were categorized under the factor called company policy and administration were the single most important factor determining bad feelings about a job. Company policy and administration are described in two ways. One involved the strength or weakness of the organization and its management. A second way to describe this category relates to how the personnel policies of an

organization affect an employee. For example, if an employee feels he has been treated unfairly, then the employee has negative attitudes about the job. The second most significant finding relates to both interpersonal relationships and supervision. For example, if an employee has poor working relationships with his supervisor or co-workers then the employee is likely to have a negative attitude about the job (Herzberg, Mausner, and Snyderman, 1959). The previous paragraphs provide a summary of the results from Herzberg's study. Next, the weaknesses of the Two-Factor Theory will be described.

A final comment about Herzberg, Mausner, and Snyderman's (1959) Two-Factor Theory describes complications of the two categories of factors. The results from the interviews of the approximately two hundred engineers and accountants demonstrate that when certain factors are combined in an episode a single factor changes from the category of satisfiers to the category of dissatisfiers. The interrelationships of factors resulted in satisfiers reported in situations that caused job dissatisfaction. For example, the respondents who reported situations that resulted in job satisfaction frequently reported the factors advancement, recognition and possibility of growth. However, when these same satisfiers were combined with the factor of poor company policies, the combination of factors was reported in high proportions of the situations that resulted in job dissatisfaction. Herzberg's theory recognizes that combinations of the two categories of factors can result in a satisfier becoming a dissatisfier. These situations demonstrate that Herzberg had difficulty categorizing some of the factors. Tutor (1986) completed a similar study of job satisfaction and motivation while using Herzberg, Mausner, and

Snyderman's (1959) methodology; however, he used teachers as subjects in place of accountants and engineer. Tutor did not feel that the results from Herzberg's original study were generalizable from accountants and engineers to other professions. Tutor's (1986) results differed in one significant way. In Tutor's study, teachers responded overwhelmingly that salary had influenced their decisions to participate in professional development programs. In this way, salary acted as a motivator instead of as hygiene as Herzberg had categorized it. Various teachers at many levels of their careers represented this result in Tutor (1986).

The results from the categories of satisfiers and dissatisfiers guide the current study to investigate whether a teacher's perception of high quality professional development is associated with a teacher's attitude toward her job. More specifically, this study investigated whether a teacher's perception of the quality of professional development she receives is related to factors of job satisfaction. The review of factors of job satisfaction informs the current study's selection of a questionnaire.

#### Definitions of Job Satisfaction

Definitions of job satisfaction can be found in research literature dating back to at least 1935 when Hoppock defined it as "any combination of psychological, physiological, and environmental circumstances that cause a person truthfully to say I am happy with my job" (p. 47). Also, from Vroom (1964), job satisfaction is the affective orientation of individuals toward the work roles that they presently occupy. "Positive attitudes toward the job are conceptually equivalent to job satisfaction and negative attitudes toward the job are equivalent to job dissatisfaction" (p. 99). Hollifield (as cited in Whitehead, 2006)

describes job satisfaction as the “...(s)tate of being that reflects positive attitudes towards the particular factors concerning job components, the work environment, and personal motivation” (p. 29). Next, Balzer et al. (as cited in Reio & Kidd, 2006) defined job satisfaction “as the feelings a worker has about his or her job or job experiences in relation to previous experiences current expectations, or available alternatives” (p. 357). Finally, Huysman (2007) defines teacher job satisfaction as “the sense of contentment and happiness of individuals in their current teaching position” (p. 16). These definitions all consist of some measure of emotional connection to the employee’s current position relative to a past history of work or future opportunities.

Ultimately, a definition for the variable *teacher job satisfaction* is required for this study to quantify the relationship with the other variables of this study. The following definition includes some of the descriptions previously provided. Also, the variable is directly related to the items of the online questionnaire that are used in quantifying the variable. For this study, the term *teacher job satisfaction* is the mean of the 16 items numbered 42-57 from the online questionnaire that explain the presence of feelings as a worker in the teacher’s current teaching position (Hirsch et al., 2006; Huysman, 2007). The key aspects of this definition that were gathered from the literature on teacher job satisfaction are that; the definition considers the teacher’s emotions relating to the teaching job, and the definition refers to the teacher’s current work situation, as opposed to the teaching career in general.

Next, a review of the recent studies that have investigated teacher job satisfaction follows. The first study from Huysman (2007) identified the factors that contributed to

rural teacher job satisfaction. The study used the Minnesota Satisfaction Questionnaire (MSQ), personal interviews, and focus groups to collect data. The MSQ consists of 20 Likert scale items. The factors that resulted in rural teacher job satisfaction were categorized into three groups: the intrinsic satisfaction factors, the extrinsic satisfaction factors, and an overall group that combined the two. The intrinsic and extrinsic groups model the factors described by Herzberg's Two-Factor Motivational Theory (1959). Based on the responses from 85 rural teachers the best predictors of overall job satisfaction were the intrinsic factors. The extrinsic factors only moderately predicted overall job dissatisfaction. Other results that were reported singled out individual factors. For instance, the factors that received the highest proportion of choices of "very satisfied" or "satisfied" were job security, activity, social service, variety, and ability utilization. Job security is defined as the way a job provides steady employment. Activity refers to the ability to keep busy all the time. Social service is the opportunity to do things for other people. Variety refers to the opportunity to vary the work routine. Ability utilization is the opportunity to do something that makes use of a teacher's abilities. Ninety percent of the respondents selected "very satisfied" or "satisfied" when asked about the above factors. Huysman (2007) characterized these five factors as intrinsic factors. Furthermore, the combination of company policies, recognition, possibility of growth, interrelationships with colleagues, and compensations as factors that resulted in job dissatisfaction among the rural teachers surveyed. The researcher concluded that these results confirmed Herzberg's theory as it relates to rural teachers.



In another recent study, Oliver (2007) studied the relationship between teacher job satisfaction and working on a team with other teachers. Oliver used two questionnaire instruments to collect data on teacher job satisfaction and the characteristics of highly effective teams. The Mohrman Cooke Mohrman Job Satisfaction scale consisted of eight Likert scale items. The eight items were split so that four items measured the teacher's level of intrinsic satisfaction with her current job and four items that measured the teacher's level of satisfaction based on extrinsic factors. Also, the researcher used Larson and LaFasto's (1990) Team Excellence for Development questionnaire to measure the extent to which the teacher's team has the eight characteristics of highly effective teams as described by Larson and LaFasto's research. The eight characteristics of highly effective teams include: (1) Principled leadership, (2) Collaborative climate and standards of excellence, (3) External support and recognition, (4) Clear, elevating goals, (5) Communication system, (6) Unified Commitment, (7) Competent Team Members, and (8) Results-driven structure. An analysis of the relationship between these teaming characteristics and the teacher's reported job satisfaction found that the characteristic "external support and recognition" was the single best predictor of both intrinsic and extrinsic levels of satisfaction. Also, "(t)he results of this study clearly indicate that principled leadership and, external support and recognition are the two dimensions that have the strongest impact on teacher motivation and satisfaction" (Oliver, 2007, p. 73). Although the eight characteristics of highly effective teams do not directly align with Herzberg's (1959) factors of satisfiers and dissatisfiers, these results do shed light on connections between professional learning communities, professional development and

teacher job satisfaction. Additionally, more of the eight characteristics of teams had stronger moderate correlations to extrinsic factors of job satisfaction as compared to intrinsic factors of job satisfaction (Oliver, 2007).

Another study by Turner (2007) investigated the relationship between features of the school organization and teachers' job satisfaction. The purpose of the study was to determine which factors of the school improved the teachers' job satisfaction. The study suggested that school organizations could use the information to promote teacher job satisfaction and possibly increase teacher retention. In particular, the features that related to the schools are (1) teacher turnover rates; (2) school size; and (3) test scores on end-of-grade reading and math tests. The characteristics that relate to the teachers are (1) years of teaching experience; (2) educational level; (3) licensure status; and (4) attendance patterns. Finally, the characteristics that relate to the students are (1) percent of minority students achieving proficiency on state end-of-grade reading and math tests; and (2) percent of disadvantaged students achieving proficiency on state end-of-grade reading and math tests. Turner used the 2002 North Carolina Teacher Working Conditions Survey (NCTWCS) to collect data measuring the components of teachers' job satisfaction. The questionnaire was administered to approximately 2,900 teachers in four urban districts in North Carolina. The questionnaire consisted of 39 items that collected data on five areas related to the teacher's working conditions. The five areas are time factors, facilities and resources, school leadership, teacher empowerment, and professional development experiences. The researcher created ten similar hypotheses. For example, one null hypothesis for the student characteristic of academic achievement

was “There is no relationship between a teacher’s job satisfaction and the math achievement of his or her students” (p. 75). Another example of a null hypothesis was “There is no relationship between a teacher’s job satisfaction and the socioeconomic status of his or her students” (p. 75). The researcher calculated a correlation coefficient for each hypothesis to measure the correlation between each of the ten factors related to school, teacher, and student and the same dependent variable measuring the teacher’s job satisfaction. Of the 10 null hypotheses, the researcher rejected three null hypotheses. Two of the three rejected null hypotheses are relevant to the current study. First, there was a significant relationship found between the teachers’ job satisfaction and academic achievement measures of both math and reading. Second, the researcher found that a significant relationship exists between teacher job satisfaction and percent of economically disadvantaged students (Turner, 2007). These results are very relevant to the current study. As the current study measured the relationship between teacher’s job satisfaction and the teacher’s perception of professional development, it is necessary to understand other factors that may affect the teacher’s job satisfaction. The 13 schools that were involved with the current study have varying levels of academic achievement and varying percentages of economically disadvantaged students. It was necessary for the data measuring the relationship between teachers’ job satisfaction and perceived professional development experiences to be grouped by similar schools based on the percentage of economically disadvantaged students and academic achievement.

Another study confirms the results found in Turner (2007). Whitehead (2006) studied factors responsible for motivating teachers to participate in professional

development activities. Whitehead's study involving a non-experimental design randomly selected 300 urban elementary and 300 suburban elementary teachers and administered three questionnaires. One of the questionnaires measured teacher job satisfaction to address the study's second research question. The second research question asked, "Is there a difference in job satisfaction and work related stress among teachers in urban and suburban schools?" (p. 27). Whitehead discovered evidence to show that teachers in suburban schools reported significantly higher levels of job satisfaction as compared to teachers in urban schools. None of the 13 schools included in the current study exist in urban settings; however, some of the schools do have characteristics similar to urban schools as compared to other schools in the study that have more suburban characteristics. As described in the demographic section of the first chapter of the current study, the schools featuring suburban characteristics have a predominately Caucasian student enrollment with lower percentages of disadvantaged students or students on free or reduced price lunch programs (Interactive Illinois Report Card, 2006; University, 2006); however, a few schools in the study have very diverse student enrollments, and high percentages of disadvantaged students or students on free or reduced-price lunch programs. Given these results, the current study grouped schools based on percentage of students involved in free or reduced price lunch programs and compare results from similar schools. While this study investigated the levels of teacher job satisfaction in relation to professional development experiences, it is important to control known factors affecting teacher job satisfaction such as the demographics of individual schools.

This review of the literature regarding teacher job satisfaction has produced a bevy of relevant information to guide the current study. First, two theories were discovered that are commonly used by researchers as theoretical frameworks in studies related to teacher job satisfaction. Maslow's Hierarchy of Needs (1954) and Herzberg's Two-Factor Motivational Theory (1959) are used repeatedly in the research for job satisfaction. Second, these theories have guided researchers in the creation of questionnaires used to measure levels of job satisfaction among teachers. Specifically, the review of the literature led the researcher to an appropriate questionnaire to be used in the current study. The North Carolina Teacher Working Conditions Survey found in Turner (2007) was used to measure levels of teacher job satisfaction at the thirteen comprehensive secondary schools in Lake County. Third, the literature provides definitions of job satisfaction to justify that the significant components of job satisfaction consist of some measure of emotional connection with the employee's current position. Finally, the review presents the most recent studies that are relevant to the investigation of perceived quality of professional development that a teacher receives and a teacher's satisfaction with her job. Two studies presented factors of teachers' jobs that had affects on the teachers' level of job satisfaction. Also, two particular studies provided evidence that, in order to investigate the relationship between quality of professional development and teacher job satisfaction, the demographics of the school must be considered (Turner, 2007; Whitehead, 2006). The evidence of these studies has guided the current research toward its purpose to investigate a relationship between the perceived qualities of professional development that a teacher receives and a teacher's satisfaction with her job.

### Teacher Working Conditions

The factors of teacher working conditions are interrelated with teacher job satisfaction, teacher retention, teacher effectiveness, and ultimately student achievement (Buckley, Schneider, & Shang, 2005; Elfers, Plecki, & Knapp, 2006; Hirsch et al., 2006; Ingersoll, 2001; Johnson, 2006; Johnson, Berg, & Donaldson, 2005; Ladd, 2009; Sioberg & Hirsch, 2006). The most current and relevant studies pertaining to these topics have administered questionnaires to teachers and administrators and have matched the results with databases of school data to investigate the relationships between teacher working conditions, teacher job satisfaction, and student achievement. Furthermore, three studies have produced definitions and lists of the most significant factors of teacher working conditions. The information included in this section supports the necessity for items in the questionnaire to be used in this current study to measure *teacher working conditions*.

First, Johnson, Berg, and Donaldson (2005) completed a comprehensive literature review of teacher retention. The review covered many variables related to teacher retention, and the one variable most relevant to the current study is teacher working conditions. Johnson, Berg, and Donaldson claim that, “[r]esearch has shown that the conditions of teachers’ work affect their ability to teach well and the satisfaction they derive from their work” (p. 5). The researchers combined the findings from seven studies, including a study of school facilities conducted by the U.S. General Accounting Office in 1995, to support their findings. The review revealed three significant factors of teacher working conditions. First the physical elements of the school describe the condition of the school and the space in which teacher work. Second, the teachers’

assignments describe the type of classes the teacher was scheduled to teach and the type of students in her classroom. Third, the curriculum, assessment, and teachers' accountability to the assessments made up another factor of teachers' working conditions. Also, this literature review found that better working conditions were associated with teacher retention. Accordingly, the researchers concluded that as a school retains highly qualified teachers, the school could provide a higher quality educational program. Therefore, a connection exists between teacher working conditions and the quality of educational programs offered within schools (Johnson, Berg, & Donaldson, 2005).

Next, Elfers, Plecki, and Knapp (2006) used extensive survey procedures along with a large database of school data to investigate the relationship between school factors and teacher retention. The study was conducted in the state of Washington using a stratified random sample of teachers throughout the state. Six questionnaires were administered over two years. The results of the six teacher questionnaires were linked to the data measuring teacher mobility found in a database collected by the state of Washington. One of three significant findings from this extensive study demonstrated that a third of the teachers indicated that as a school failed to provide sufficient time for professional development, teachers formed moderate to strong reasons to leave their current teaching position. Next, the strength of the school's leadership affected the working environment in the school and also affected the teachers' decisions to stay or to leave their current teaching positions. The third of the three findings reported differences in teachers' decisions to stay or leave, and the teachers' level of job satisfaction was strongly related to the proportion of students who were on free or reduce-price lunch

programs. Elfers, Plecki, and Knapp (2006) categorized a school as high poverty if at least 50% of the students attending the school were on a free or reduced-price lunch program. Schools were categorized as a low poverty school when at most 20% of the students were on a free or reduced-price lunch program. The schools categorized as high poverty had much more difficulty retaining their highly qualified teachers. Professional development and school leadership are factors of teacher working conditions, and the results of these questionnaires demonstrate a relationship between teacher working conditions, teacher retention, and teacher satisfaction.

Most recently, Ladd (2009) used survey data from 2,900 North Carolina schools and a database of information from all North Carolina Public schools to investigate whether teacher working conditions affect teacher effectiveness, and which factors of teacher working conditions are the most significant in teacher effectiveness. Ladd's investigation of the data from the New Teacher Center's Teacher Working Conditions Survey and the school's data led to four findings that are relevant to the current study. First, the quality of teachers' working conditions is highly predictive of teachers' decisions to remain at a current school. If a teacher perceives herself to be working in poor working conditions, then she is more likely to leave that teaching position. Second, teacher turnover does negatively affect the quality of classroom instruction offered at a school. It is difficult for a school to provide a coherent educational program when a new group of teachers is arriving in the beginning of each school year and leaving at the end of that same school year. Third, school leadership emerged as the dominant factor in teacher working conditions. Weak school leadership led to more teachers leaving a



school, which disrupted the educational program of a school. And fourth, Ladd discovered a moderate but statistically significant positive relationship between student achievement and teacher working conditions. This finding was specific to fourth and fifth grade students because these were the only students for which the researcher had complete academic data to investigate the relationship. Ladd was able to connect the measures of teacher working conditions as reported by the same teachers who also had students who completed appropriate standardized tests for math and reading. The bi-variate data revealed the statistically significant relationship.

Ladd (2009) provides further evidence supporting the positive relationship between teacher working conditions, teacher job satisfaction, and teacher effectiveness. And in a specific case, the positive relationship extends to student achievement. Next, Buckley, Schneider and Shang (2005) surveyed over 800 teachers in Washington D.C. to investigate the relationship between the quality of school facilities and teachers decisions to return to the current school for another year.

Buckley, Schneider, and Shang (2005) used the dichotomous question, 'Do you plan to remain another year in your current school?' as a dependent variable in a study measuring a handful of independent variables. Some of the independent variables that were found to have significant associations with teachers leaving a school included poor conditions of facilities, and dissatisfaction with the pay. Also, overall teacher job dissatisfaction was linked to teachers' decisions to leave a current position. Next, Ingersoll (2001) investigates teacher turnover and teacher shortages and how the topics relate to organizational and school characteristics.

Ingersoll (2001) investigated teacher shortages and teacher turnover on a national scale. He used data from the National Center for Educational Statistics' School and Staff Survey (SASS), and a second questionnaire called the Teacher Follow-Up Survey (TFS). The SASS gathered data on characteristics of schools; the data includes teacher support from school administration, student discipline problems, faculty input in to policymaking decisions, and salaries. The TFS was administered to the teachers who had originally completed the SASS and had left their teaching positions. Ingersoll's study contained two premises that are relevant to the current study. First, he proposed that understanding teacher turnover is linked to the performance and effectiveness of the school. Second, Ingersoll proposes that the characteristics and condition of the school must be examined to fully understand teacher turnover. He discovered that teacher retirement explains only a small proportion of the total number of teachers who leave the teaching profession. The largest proportions of teachers who leave a current job do so because they are dissatisfied with their current position, and others leave the teacher profession completely to pursue a different career. Ingersoll calls this the revolving door effect. He claims that there are enough qualified individuals entering the teaching profession. There is no teacher shortage. The issue is more strongly related to retaining qualified teachers. Ingersoll reports four organizational conditions that are strongly related to retaining high quality teachers. The four conditions include: (a) a compensation structure for teachers, (b) level of administration support, (c) degree of conflict and strife within the school, and (d) degree of teacher input into school policy. These conditions provide a list of factors of teacher working conditions. Also, Johnson, Berg, and Donaldson (2005) provide

additional information regarding factors of teacher working conditions that support the factors used in The New Teacher Center's Teacher Working Conditions Survey (Sioberg & Hirsch, 2006). Ultimately, Johnson, Berg, and Donaldson (2005), Buckley, Schneider, and Shang (2005), Ingersoll (2001), and Ladd (2009) all provide support for the importance of teacher working conditions in relation to teacher job satisfaction, and teacher effectiveness. Two lines of reasoning have been described in these studies. One suggests that better teacher working conditions relate to retaining quality teachers. By retaining more quality teachers, schools are more likely to provide a more cohesive and effective educational program (Buckley, Schneider, & Shang, 2005; Elfers, Plecki, & Knapp, 2006; Ingersoll, 2001; Johnson, Berg, & Donaldson, 2005; Ladd, 2009). A second connection suggested by these studies provides that teachers report higher levels of job satisfaction connected with better teacher working conditions. Buckley, Schneider, and Shang (2005) and Ingersoll (2001) show that teachers who report high levels of job satisfaction demonstrate higher levels of performance. Given these relationships between teacher working conditions and teacher job satisfaction, it is necessary to investigate both topics in the current study. In order to better understand the relationship between teacher job satisfaction and professional development, it is necessary to investigate teacher working conditions. The literature supports including all three topics in the questionnaire of this current study. The literature describes that teacher working conditions are related to teacher job satisfaction and that teachers who report high levels of job satisfaction perform better. The current study incorporated this knowledge and investigated how professional development experiences fit into the puzzle. Recall, two of the four research

questions of the current study guide the investigation of the relationship between teacher working conditions and teacher professional development. Furthermore, the final research question of the study investigated whether a relationship exists between specific factors of teachers' working conditions and teacher professional development. Next, the literature that describes the factors of teacher working conditions included in the current study will be presented.

The studies mentioned above, Johnson, Berg, and Donaldson, (2005), Buckley, Schneider, and Shang (2005), Ingersoll (2001), Ladd (2009) and Elfers, Plecki, and Knapp (2006) provide evidence that teacher working conditions have a positive relationship with teacher job satisfaction, teacher retention, and teacher effectiveness. It is appropriate to provide some of the descriptions of teacher working conditions found in the literature. Three authors have provided either a definition or factors of teacher working conditions. Johnson (2006) provides a very comprehensive, but general, definition of teacher working conditions. Johnson's definition lists seven features that describe all facets of a teacher's work environment. The physical features of buildings and facilities provide a platform for teacher's work. The organizational structures include teacher workload, supervisory roles, autonomy, and lines of authority. The sociological features describe the teacher's roles, status and characteristics of peers and students. The political features of the school include a teacher's opportunity to provide input to guide school policy. The cultural features of a teacher's work environment refer to the values, traditions and norms of the school. The psychological features of a school refer to opportunities for a teacher to learn and grow. And finally, the educational

features, such as curriculum, testing policy, and other topics that pertain to the work of a teacher are considered to be part of the teacher's work conditions. Any of these seven features could enhance or detract from the teacher's work conditions. Next, Ingersoll (2001) suggests four conditions of a work organization that are important to teacher retention. These four have the most effect on a teacher's positive attitude about her current position. First, the compensation structure for employees is significant to teacher working conditions. Second, a sufficient level of administrative support is important to creating a positive work environment. Third, the degree of conflict and strife within the school affects the teacher's work conditions. And fourth, the degree of employee input to influence school policy is related to positive working conditions. Finally, Hirsch et al. (2006) completed a literature review and found five factors of teacher working conditions commonly mentioned. Some of the five factors are similar to those features listed in Johnson (2006) and Ingersoll (2001). Facilities and resources are mentioned in Johnson (2006) and they are the second section of the Teacher Working Conditions Survey created by the New Teacher Center (Hirsch et al., 2006; Sioberg & Hirsch, 2006). Next, school leadership and teacher empowerment are mentioned in both Ingersoll (2001) and Johnson (2006). Time is mentioned as a specific factor in the Teacher Working Conditions Survey (Sioberg & Hirsch, 2006). It is only implied in Johnson's list as part of the organizational structure. Finally, the New Teacher Center's Teacher Working Conditions Survey includes a section regarding teacher professional development. This factor of teacher working conditions is only mentioned vaguely in the other two

literatures, but it is a component of a teacher's work environment. And as mentioned in Elfers, Plecki, and Knapp (2006), it has a positive relationship to teacher retention.

Ultimately, a definition for the variable *teacher job satisfaction* is required for this study to quantify the relationship with the other variables of this study. The following definition includes some of the descriptions previously provided. Also, the variable is directly related to the items of the online questionnaire that are used in quantifying the variable. For this study, the term *teacher working conditions* is the mean of the 24 items numbered 17-40 from the online questionnaire that explain the presence of physical and daily schedule attributes, school leadership attributes, and professional development opportunities of the teacher's work environment. This definition combines the factors of teachers' daily work environment that relate to teacher working conditions. These specific factors are measured by more detailed variables of the study.

Teacher working conditions are interwoven in teacher job satisfaction, teacher effectiveness, and teacher professional development. There is evidence in the literature that demonstrates a positive relationship amongst the variables. So it was necessary to provide factors of teacher working conditions and to support the sections of the Teacher Working Conditions Survey.

Finally, the sixth section of this literature review addresses an area that is appropriate to include in any study of teacher professional development. This section provides background on the budget implications of teacher professional development.

### Budget Implications for Professional Development of Teachers

The potential of professional development to improve student achievement is so great that continued complacency toward the status quo is not acceptable. Instead, there is a need for a professional development improvement plan that works on the national, state, and local levels (Sparks & Hirsh, 2000). Sparks and Hirsh confirm that research demonstrates that effective professional development can improve teaching. However, the small amount of money in school budgets that is allocated for professional development results in ineffective experiences. Teachers receive one-shot workshops that lack connections to their classrooms and to other professional development experiences. There is no continuity of the teachers' professional development program. Ultimately, teachers receive ineffective professional development because school budgets do not allow for a comprehensive, long-term program (Killeen, Monk, & Plecki, 2002; Odden, Archibald, Fermanich, & Gallagher, 2002; Sparks & Hirsh, 2000).

In most of the educational systems where teachers work, some form of professional development is provided. Corcoran (1995b) reports that studies indicate that school districts on average spend 3-7% of their budgets on professional development. In the report *What Matters Most: Teaching for America's Future*, the authors state that one to three percent of districts' operating budgets are spent on professional development for teachers. Further, the report states that "even the most generous estimates, however, are paltry compared with the expenditures invested in employee development in leading corporations and in other countries' schools" (National Commission on Teaching and America's Future, 1996, p. 40). Corcoran (1995b) similarly argues that "state

investments in professional development probably range from less than 1% to more than 3% of total state spending on public education” (p. 19). More recently, studies of large, urban school districts indicate that these organizations were spending between 2.2% to 6.9% of their operating budgets on professional development programs (Miles, Odden, Fermanich, & Archibald, 2004).

Furthermore, Killeen, Monk and Plecki (2002) report that throughout the nation, school districts spend three percent of total general expenditures on teacher professional development. Notably, the budget item of professional development has not changed dramatically over the past decade in relation to the number of demands made on the school districts to improve instruction (Killeen, Monk, & Plecki, 2002).

In addition, school systems have had some difficulty weighing the costs and benefits of professional development. The costs of professional development programs are not limited to the cost of the development training alone. In addition to the initial costs incurred by the school district, teachers’ compensation typically increases for the remainder of their careers based on the number of hours of college credit each teacher has earned. Additionally there is the cost of substitute teachers when the classroom teacher participates in professional development experiences during the school day (Killeen, Monk, & Plecki, 2002).

Furthermore, Odden et al. (2002) describe another category of costs called uncompensated teacher costs. “...(T)eachers spend time on professional development for which they are not compensated” (p. 69). The teachers usually have to bear the cost to complete this task with their own resources and time. By placing the financial burden on



the teacher, the professional development experience becomes less effective since this component of the professional development experience is voluntary rather than mandatory. A more effective program would provide support for the teachers to introduce lessons learned from the professional development experience into the classroom (Birman, Desimone, Porter, & Garet, 2000; Kennedy, 1998; Wenglinsky, 2002). Thus, a school district should provide supplies and stipends for teachers to create the necessary classroom materials to implement the new strategies gained from the professional development experience (Odden et al., 2002; Pickering, 2008).

In addition to the uncertainty regarding the cost of professional development for both the teacher and the school system, it is difficult to precisely measure the benefits (Guskey, 1999; Guskey & Sparks, 1991). How does a school district measure the benefits received by the students and school as a whole from teachers' professional development experiences? How are dollar amounts assigned to gains in test scores? Will teachers stay at a school that offers effective professional development, thus reducing the costs of recruiting and hiring new teachers? Finally, how does a school's business department calculate the return on the investment, that is, what is the increase in the quality of instruction associated with the cost of professional development? These questions are closely related to the costs and benefits of professional development. These questions are difficult to answer and remain outside of the scope of this study; however, they are pertinent to the topic of professional development.

Finally, professional development has historically been a low-priority budget item as compared to other operating expenses that a school incurs (Hawley & Valli, 1999).

The lack of funding that exists for professional development programs creates the demand for prioritizing the most important characteristics of professional development for teachers (Odden et al., 2002). Most school districts are unlikely to design a professional development program that addresses all the characteristics of effective professional development that are available from the literature. Each school's individual program must incorporate the characteristics that are the most likely to make the program successful.

One of the most important benefits of this study is to extend the knowledge base of the characteristics of effective professional development. The researcher posits that the most important characteristics are those most commonly mentioned in various lists in literature matched with those characteristics that provide teachers with opportunities to learn new content knowledge and pedagogy. In other words, professional development experiences for teachers that have similar features as the social constructivist learning model and adult learning models are related to changing classroom practice (Berger, 1999; Saxe, Gearhart, & Nasir, 2001). Consequently, teachers will develop the knowledge to shift from a textbook curriculum to classroom practices that incorporate a standards-based curriculum.

### Conclusion

Combining the history of professional development with the important changes in American secondary education, we can learn that the secondary public education system of America has changed and developed over time. Along with these changes in the education system come changes in professional development of the teachers who work in

the school system. As federal legislation, NCLB 2001 has produced many of the recent changes across all content areas, and, more recently, the 2007 *National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering and Mathematics Education System* has called for specific changes in math and science. The call for highly qualified teachers of secondary mathematics is clear. National reports have demanded a highly qualified teacher in every classroom since 1996.

Also, the mathematics curriculum has been reformed in the last two decades. In 1991, the National Council of Teachers of Mathematics published standards that created a different vision of mathematics education (National Council of Teachers of Mathematics, 1991). These standards required secondary mathematics teachers to understand their content more deeply and to use new pedagogies to teach the new curriculum to their students (Borasi & Fonzi, 2002; Goldsmith & Mark, 1999). Therefore, it is reasonable to expect that the educational system that has instituted these changes should provide the professional development experiences for teachers.

Along with the reform of mathematics curriculum and federal legislation, which calls for highly qualified teachers in each classroom, the definition of professional development has expanded beyond the one-shot workshops (No Child Left Behind Act of 2001, 2001). Professional development refers to a long-term program that is directly linked to teachers' daily practice (Desimone et al. 2002; Elmore, 1997; Elmore, Peterson, & McCarthy, 1996; Guskey, 1986; Guskey & Sparks, 2002).

The demand for improved professional development to train teachers to adapt is an expensive endeavor for an educational system that is already working with very

limited funds, so it is important for this research to prioritize the characteristics of professional development, which have been documented in the literature cited previously. This prioritization guides program designers to create more effective professional development experiences for secondary mathematics teachers.

Of the many characteristics discovered in the literature, the most frequently mentioned characteristic in the literature is that professional development enhances teachers' content and pedagogic knowledge. The second most common characteristic is that professional development provides sufficient time and other resources. And the third most frequently mentioned characteristic in the lists is that professional development promotes collegiality and collaboration. The researcher posits that these characteristics are similar to the social constructivist learning model, which provides teachers with the most effective opportunity to learn their content more deeply and to learn the appropriate pedagogies for teaching the enhanced curriculum to their students, in light of the three fundamental principles of the social constructivist learning model cited above. First, the model assumes that the learner has prior knowledge of the subject to be learned (Simon & Schifter, 1993; Von Glasersfeld, 1990; Winitzky, Stoddart, & O'Keefe, 1992). As secondary math teachers are the learners in this context, they will have prior knowledge of secondary mathematics and the strategies used to teach the subject. The calls for the professional development experience to be subject specific, the most commonly mentioned necessary characteristic in the literature, align with the scope of this first principle. Next, the second most frequently mentioned characteristic, which calls for the professional development experience to provide educators with sufficient time and other

resources, closely relates to another fundamental principle of the social-constructivist learning model. This fundamental principle is that teachers need the necessary time to work in a community of similar teachers to create cognizant dissonance and to discuss, share and reflect to resolve the dissonance (Hammett & Collins, 2002; Winitzky, Stoddart, & O'Keefe, 1992). Third, the learning model claims that knowledge construction requires the learner to be actively engaged in a social environment (Beswick, 2007; Borasi & Fonzi, 2002; Simon, 1994; Von Glasersfeld, 1990). This principle is directly related to the third most commonly mentioned characteristic that the professional development experience promotes collegiality and collaboration. In addition, the most frequently mentioned characteristics of effective professional development closely resemble features of Knowles adult learning model (Knowles, Holton, & Swanson, 1998). Consequently, the researcher hypothesizes that if teachers receive professional development experiences that feature these characteristics, then the teachers would report higher levels of job satisfaction. The researcher asks if there is a relationship between a teacher's perceived quality of professional development experiences and the teacher's level of job satisfaction. Furthermore, teacher working conditions are intertwined with teacher professional development and teacher job satisfaction. Given this interrelationship amongst the three variables, it is appropriate to study the relationship between professional development and teacher working conditions.

Ultimately, the goal of teacher professional development is to improve student achievement. Unfortunately, there exist too many variables and relationships between professional development and student achievement for one study to manage. It is

possible that the connection between teacher professional development and improved student academic achievement will never be fully understood. The current study has a narrow focus on the teacher-related aspects of the relationship. The researcher hypothesizes that teachers would associate job satisfaction and better working conditions with high-quality professional development opportunities. It is plausible that teachers who report higher levels of job satisfaction perform their jobs better than those teachers who report lower levels of satisfaction (Hall, 2007; Turner, 2007).

Finally, the researcher proposes that these investigations provide clearer understanding of specific characteristics of professional development as they relate to teacher job satisfaction and teacher working conditions. Having clearer understanding of these relationships, guide designers of professional development to create more effective programs. The next chapter provides the methodology to investigate the relationships mentioned above.

## CHAPTER III

### METHODOLOGY

#### Introduction

This chapter provides the research design and the methodology to be used to complete the current study. Also, this chapter provides background information on Likert items and scales, a description of the instrument used to collect the data, a description of the reliability and validity of the instrument, a description of the population of the study, the data collection process, the data analysis, and the research questions and hypotheses that guide the methodology. The next section provides the purpose of the study.

Formally, the purpose of this study was to investigate the relationships between teachers' perceptions of the following variables: characteristics of teacher professional development, teacher job satisfaction, and teacher working conditions. Furthermore, this study investigated the relationships between characteristics of teacher professional development and teacher job satisfaction, as well as, an examination of four areas of teacher working conditions as they relate to teacher professional development. Four research questions have been created to guide the investigations of these relationships. The following section will provide a description of the schools and the teachers of those schools who were invited to complete the questionnaire for this study.

### Population of Schools

This section describes the population of schools and the rationale for choosing this particular population. First, according to reports published by *Education Week*, the ISBE provides no standards for professional development, nor does the ISBE provide funding for a statewide professional development program (Editorial Projects in Education Research Center, 2008). These factors lead to the lack of uniformity of professional development for teachers in Illinois's public schools. Second, a comprehensive study of professional development of teachers in Illinois's public schools requires more resources than those available for this study. Given these two factors, namely the lack of uniformity of professional development programs across the state of Illinois and the lack of resources for the current study, the current study focused on a smaller population of schools. Lake County provides a population that fits the resources of this study. Currently, 20 comprehensive public secondary schools exist in Lake County. Approximately 43,000 students attended the 20 schools in the 2009-2010 school year (Editorial Projects in Education Research Center, 2008; Illinois School Report Card, 2010). Also, there are approximately 400 secondary mathematics teachers at the 20 schools. The following section describes the 20 secondary schools of Lake County.

The following descriptive statistics were gathered from the 2010 school report cards available through the ISBE website (Illinois School Report Card, 2010). The data refer to the schools' student enrollments, racial and ethnic backgrounds, and academic performances. These 20 schools had a total enrollment of 43,054 students in the 2009-2010 school year. As the enrollment numbers indicate, the mean enrollment for each



public secondary school in Lake County is approximately 2,100 students. However, the population of schools in which the current study is being conducted, has a wide range of values in many of the statistics that describe the schools. For example, the lowest enrollment among the 20 schools was 845 students, while the highest enrollment was 4,349 students.

According to the same school report cards, approximately 65% of all the students in the population are listed as white, 8% are listed as black, 19% as Hispanic, 5% as Asian or Pacific Rim, and 3% as either Native American or multiracial background. However, the Hispanic population ranges greatly at individual schools. At two particular schools, the Hispanic populations are at least 60% of the total school population, while at five different schools the Hispanic population is less than 5% of the total population. The demographics of white and black students at the schools in the region vary greatly, as well. Next, it is appropriate to provide a description of the economic status for the 20 Lake County public secondary schools.

Similar to the ethnic and racial diversity present at some of the 20 secondary schools in Lake County, there is economic diversity at the 20 schools (Illinois School Report Card, 2010). This factor is important in the study of teacher job satisfaction. Turner (2007) and Whitehead (2006) discovered that teachers at schools where high proportions of students from economically disadvantaged homes or high proportions of students receiving free or reduced-price lunch programs reported lower levels of teacher job satisfaction as compared to teachers at schools where this same category of students was a lower proportion of the school population. Based on these results, it is appropriate

to disaggregate the questionnaire data by economic variables related to the student populations of the teachers who respond to the questionnaire. Therefore, the current study categorized the Lake County secondary public schools into two groups based on the proportions of economically disadvantaged students and proportions of students receiving free or reduced-priced lunches. The statistics from the questionnaire data for the schools in the two categories were analyzed separately. This additional level of grouping has reduced the confounding effects that the economic variables could have on the relationship between professional development and teacher job satisfaction. In addition, the disaggregated data may provide a clearer understanding of the relationship between the three variables: teacher professional development, teacher job satisfaction, and teacher working conditions.

An analysis of the 2010 Illinois School Report Card led to the “low-income rate” which was reported for each school. Students were categorized as part of the Low Income Rate by the following definition: “Low-income students come from families receiving public aid; live in institutions for neglected or delinquent children; are supported in foster homes with public funds; or are eligible to receive free or reduced-price lunches” (Illinois School Report Card, 2010). The low-income rate was used to categorize the schools. In the 2010 school report cards, six schools reported Low Income Rates ranging from 23% to 85%. The remaining 14 schools reported rates for the same statistic ranging from 0% to 19%. Given this important difference in these two groups of schools, in light of the results from Turner (2007) and Whitehead (2006), the current study analyzed the questionnaire data from these two groups of schools separately. The

next section will provide a description of the academic performances of the public secondary schools Lake County.

The academic performances of the schools provide another description of the populations of the schools in this study. Also, the academic performances of the schools vary greatly. Thus, it is necessary to provide both the minimum and maximum values for schools in this population, along with the mean value for the Lake County high schools from the 2009-2010 school year. The mean composite ACT score in May of 2010 from the 20 Lake County schools was 22.3 while the mean mathematics ACT score for the same population is 22.4. Again, the ranges of ACT composite and mathematics scores from the 20 high schools vary greatly; thus, the mean scores alone do not provide a complete description of the schools in the population of the study. ACT composite and mathematics scores for one particular school are both approximately 16, which represent the lowest in the county. In contrast, two schools had scores of 26.3, the highest mean composite score in the county, and another school has the highest mean mathematics score with a 27. When considering an individual from the entire population, it is important to note that a single standard deviation of the ACT distribution is approximately 5.0 units (College Board, 2008; Illinois School Report Card, 2010). The graduation rate is another measure of the academic success of a secondary school. The mean graduation rate of the Lake County secondary schools in 2010 was 92.2%, while the lowest graduation rate for one particular school was 73.5%, and the graduation rates of eleven schools were at least 95%. This information indicates a wide range of academic performance at these 20 schools.

These statistics of enrollment, racial or ethnic background, and academic performance of the schools provide a description of the secondary schools operating in Lake County, Illinois. Finally, only mathematics teachers from the schools that granted permission were contacted to complete the questionnaire. The researcher holds a position of authority in the mathematics department of one of the secondary schools in Lake County. This relationship to the potential subjects at the secondary school could result in unreliable data; therefore, teachers in that particular mathematics department were omitted from the data-collection process.

The questionnaire used in this study to collect data to examine the relationships between the variables of teacher professional development, teacher job satisfaction, and teacher working conditions was administered to 281 secondary mathematics teachers in 13 of the 20 comprehensive public secondary schools in Lake County, Illinois. Sixty-five questionnaires were returned, however one questionnaire was only partially completed. The results for this study are calculated from the 64 completed questionnaires received by the researcher in the autumn of the 2010-2011 school year. The next paragraph provides a demographic description of the 64 respondents who completed the questionnaire.

The demographic data used in this description was gathered from the teachers' responses to the demographic items at the end of the questionnaire. With regard to the gender of the respondents, 61% of the 64 respondents were females, and 39% were males. The subgroup of 48 teachers from schools with low-income rates below 20% had a very similar distribution of the genders, 58% of the respondents were females and 42% were males. The 16 respondents from schools with low-income rates greater than 40%

were 69% females and 31% males. Next, the 64 respondents will be described based on the level of education that has been attained.

Both the total group of 64 teachers and the subgroup of 48 teachers from schools with low-income rates below 20% had similar distributions for the variable level of education. In the total group and the subgroup of 48 teachers approximately 18% responded that the bachelor's degree was the highest degree attained. Approximately 79% of the respondents had achieved a master's degree, and 3% had earned a doctorate degree. The distribution from the 16 teachers from the schools with low-income rates greater than 40% follows. Twelve percent (12.5%) of the respondents had reported that a bachelor's degree was the highest degree earned, and 87.5% had reported that a master's degree was the highest degree earned.

With regard to race and ethnicity, the 64 respondents were predominately white. Approximately, 93% of the respondents described themselves as white. The remaining percentages of the ethnic distribution were described as mixed or multiple ethnicity, Asian or Pacific Islander, or Hispanic. Finally, this description of the 64 teachers who completed the questionnaire provided data with regard to the number of years the teachers have been employed as educators.

The respondents were given six categories, one of which they could choose to describe the number of years they have been employed as an educator. Of the 64 respondents, 1.5% of the teachers were employed in the first year as an educator, 17% of the teachers were in the second or third year employed as an educator, 16% of the respondents have been employed as an educator for 4 to 6 years, 22% of the respondents

have been employed as an educator for 7 to 10 years, 23% of the respondents have been employed as an educator for 11 to 20 years, 9% of the respondents have been employed as an educator for 20 or more years, and 6.5% of the respondents did not provide a response to the educational experience question. This concludes the demographic description of the 64 teachers who completed the questionnaire used in this study.

### Ten Variables of the Study

This section lists the 10 variables used in this study to examine the relationships mentioned in the four research questions. These variables have been defined using some of the descriptions found in the literature related to the teacher professional development, teacher job satisfaction, and teacher working conditions. Also, the variables are quantified by including the specific items on the online questionnaire that directly relate to the variables. A mean for each of these variables was calculated for each respondent. The relevant means were paired with another mean based on the research question to create an ordered pair for each respondent. These ordered pairs were used to calculate the Pearson correlation coefficients that were used to quantify the relationships referred to in the research questions.

The term *teacher professional development* is the mean of the 16 items numbered 1-16 from the online questionnaire that explain the presence of an ongoing program offered to educators to develop new knowledge, skills, approaches and dispositions to improve their effectiveness in their classrooms (Loucks-Horsley et al., 1998).

The term *teacher working conditions* is the mean of the 24 items numbered 17-40 from the online questionnaire that explain the presence of physical and daily schedule

attributes, school leadership attributes, and professional development opportunities of the teacher's work environment.

The term *teacher job satisfaction* is the mean of the 16 items numbered 42-57 from the online questionnaire that explain the presence of feelings as a worker in the teacher's current teaching position (Hirsch et al., 2006; Huysman, 2007).

The term *enhancement of teacher's knowledge* is the mean of the six items numbered 1, 6, 7, 8, 15, and 16 from the online questionnaire that explains the presence of professional development experiences that enhance the teacher's understanding of the content they teach in the classroom and the ways students learn that content (Guskey, 2003).

The term *collaboration* is the mean of the four items numbered 2-5 from the online questionnaire that measure the presence of opportunities for teachers to work together, reflect on their practices, exchange ideas, and share strategies and expertise during teacher professional development experiences (Guskey, 2003).

The term *time and resources* is the mean of the six items numbered 9-14 from the online questionnaire that measure the presence of time during teacher professional development experiences to deepen teachers' understanding of content, analyze students' work and develop new approaches to instruction (Guskey, 2003).

The term *time factors* is the mean of the three items numbered 17, 18, and 19 from the online questionnaire that explain the presence of impediments on teacher's time to plan and collaborate (Hirsch et al., 2006).

The term *facilities and resources* is the mean of the five items numbered 20 through 24 from the online questionnaire that explain the presence of important resources such as instructional materials, communications technology, office equipments, and a clean safe work environment (Hirsch et al., 2006).

The term *school leadership* is the mean of the seven items numbered 25 through 31 from the online questionnaire that measure the presence of leadership conditions that contribute to trusting, supportive, empowering environments and sustained efforts to address teacher concerns (Hirsch et al., 2006).

The term *professional development* is the mean of the nine items numbered 32-40 from the online questionnaire that measure the extent the resources and opportunities available for teachers to participate in professional development (Hirsch et al., 2006).

The next section will describe the difficulty related to examining the connection between teacher professional development and student academic achievement.

#### Teacher Professional Development and Student Academic Achievement

Ultimately, the objective of professional development for teachers is to improve student academic achievement. However, there are far too many factors between the treatment of a professional development opportunity experienced by a teacher and the desired result of improved student academic achievement to be examined in one study. This study does not purport to explain or to define that relationship. Marzano (2003) looks back at 35 years of research that describes factors that relate to the school in which the learning takes place. Also, Marzano describes some of the factors that relate to the teacher in the classroom; in doing so Marzano also shows how these factors occur among



other factors, all of which are intertwined in the relationship between teacher professional development and student academic achievement. Marzano's summary of 35 years of research provides only significant findings in the field. His body of literature does not provide conclusive evidence of the relationship between teacher professional development and student academic achievement. Guskey (1986) and Yoon (2007) provide foundational models describing the same relationship with more factors that intertwine in the relationship between teacher professional development and student academic achievement. In Guskey (1986), teacher beliefs and attitudes about the professional development experience relates to student achievement. In Yoon (2007), teacher knowledge and skills are intertwined among the other factors in the relationship of professional development and student achievement. Given the difficulty related to the entire relationship between teacher professional development and student academic achievement, this study has taken a narrow focus on the relationship between teacher professional development, teacher job satisfaction and teacher working conditions. The researcher hypothesizes that it is possible that a teacher who receives high quality effective professional development experiences would report high levels of positive attitudes about her job or high teacher job satisfaction. Therefore, it is necessary to focus on the relationships amongst the three broad variables.

These relationships were determined based on means of Likert scores of these variables as measured by the teachers' responses on a questionnaire. The researcher proposes to measure these relationships by asking teachers in mathematics departments in secondary public schools to provide responses to 67 questionnaire items. The

questionnaire consists of three sections containing Likert items that ask each teacher to rate the teacher professional development experiences she receives at her school, her teacher working conditions, and her teacher job satisfaction. An individual teacher's responses from each of the three sections were combined to generate a mean for each of the three broad variables of this study. The three broad variables are teacher professional development, teacher job satisfaction, and teacher working conditions. Three means were calculated for each teacher in the sample. One mean quantified the teacher professional development she receives from her school. A second mean quantified the teacher's magnitude of teacher job satisfaction, and a third mean measured the teacher's rating of the level of teacher working conditions that she experiences in her workplace. Next, each teacher's mean for teacher professional development has paired with the teacher's mean for teacher job satisfaction to create an ordered pair to be graphed on a Cartesian coordinate system. A Pearson correlation coefficient was calculated from these ordered pairs to measure the relationship. A similar pairing was completed using the means of teacher professional development and teacher working conditions. Again, a Pearson correlation coefficient was calculated to measure the relationship between those two variables. This explanation provides a basic description of how this study has answered the first and second research questions. Continuing in this method, the third and fourth research questions were answered in similar ways. Means were calculated for each teacher based on their responses to the items pertaining to three specific categories of professional development: (1) Collaboration that are measured by four items on the questionnaire, (2) Time and Resources that are measured by six items on the

questionnaire, and (3) Enhancements of teacher's knowledge that are measured by six items on the questionnaire. These three means from responses to items pertaining to each professional development characteristic from each teacher were paired with the teacher's mean from teacher job satisfaction. Each teacher's responses generated three ordered pairs. A Pearson correlation coefficient was calculated for each of these three sets of ordered pairs to measure the relationships. The strongest correlation coefficient provided the answer to the second research question. Finally, each teacher's responses to the items pertaining to the four areas of teacher working conditions: (1) Time factors that are measured by three items on the questionnaire, (2) Facilities and Resources that are measured by five items on the questionnaire; (3) School leadership that is measured by seven items on the questionnaire, and (4) Professional development that is measured by nine items on the questionnaire were used to generate four means. These four means were paired with the teacher's means from teacher professional development to calculate four Pearson correlation coefficients. The strongest correlation coefficient provided the answer to the fourth research question.

It is necessary to mention that this procedure did not determine which teachers report a high level of effective professional development, or high level of teacher job satisfaction. The procedure did not set a standard of high levels of effective professional development as perceived by the teachers, nor did the procedure set a standard of high levels of teacher job satisfaction. This procedure had the feature of measuring the relationship between variables. Furthermore, a teacher may have reported the highest mean for the variable of perceived levels of professional development, but that highest

mean did not imply that the teacher has reached a research-based standard level. The means only measure a relative measure of the variable as compared to that of the other teachers who respond to the questionnaire.

The second research question of the study investigated the relationship between the teacher professional development and that teacher's perceived level of teacher working conditions. The relationship was measured using the same procedure that measured the relationship between teacher professional development and teacher job satisfaction.

The third research question of this study investigated specific characteristics of professional development as they relate to teacher job satisfaction. The researcher suggests that if effective professional development is associated with teacher job satisfaction, then it is appropriate to investigate which characteristics of effective professional development experiences have the strongest relationship with job satisfaction. In the literature reviewed in the second chapter of this study, the analysis of 23 lists of characteristics of effective professional development found that the majority of the lists claim that professional development should: (1) Enhancement of teacher's content and pedagogical knowledge, (2) Provide sufficient time and other resources, and (3) Promote collegiality and collaboration. While this study focused on three characteristics based on the analysis presented in Chapter II, three additional relationships were also investigated. A school leader would be well informed by the literature if she provided to her teachers, professional development experiences that consisted of characteristics that made the experience more effective and that were strongly related to

teacher job satisfaction. It is plausible that a teacher who reports a high magnitude of teacher job satisfaction may demonstrate high levels of performance. This plausible relationship is an extension of the current study and would require investigation in another study.

The fourth research question of this study investigates which of the four areas of working conditions: (1) Time factors, (2) Facilities and Resources, (3) School leadership, and (4) Professional development, has the strongest relationship with teacher professional development. In a similar procedure used to address the third research question of this study, a relationship was measured between each of the four areas of teacher working conditions and teacher professional development. Four correlation coefficients were calculated for these pairings. The correlation coefficient value that is farthest from zero was the area of teacher working condition that has the strongest relationship to perceived level of professional development.

The researcher hypothesizes that a relationship exists between specific factors of teacher working conditions and the variable teacher professional development. The factors of teacher working conditions are categorized by the New Teacher Center as: (1) Time factors, (2) Resources and Facilities, (3) School leadership, and (4) Professional development (Hirsch, Freitas, Church, & Villar, 2008; Illinois School Report Card, 2009; Sioberg & Hirsch, 2006). The researcher hypothesizes that teachers who report high levels of these factors in their working conditions also perceived receiving high-quality professional development, a perception that again results in higher levels of job satisfaction.

This quantitative research design used a questionnaire of 67 items to collect data to study the possible relationships mentioned previously. The questionnaire was administered to the secondary mathematics teachers at 13 of the 20 public comprehensive secondary schools in Lake County, Illinois.

The data collection procedure combined an inventory of items that measure the perceived existence of characteristics of professional development and items measuring teacher working conditions and teacher job satisfaction. The 16 items that have been created for this study collected quantitative data that measures the teacher's perceived presence of the characteristics in the teachers' professional development experiences that relate to the characteristics mentioned most frequently in the teacher professional development literature. These 16 items were combined with items from the New Teacher Centers' Teacher Working Conditions Survey. Specifically, the questionnaire created for this study used 44 items from various versions of the New Teacher Centers' Surveys. And finally, seven demographic items were included to disaggregate the data for further analysis. The reliability and validity of the new 67 item questionnaire have been established. The methods for demonstrating reliability and validity will be described later in this chapter. Next, the four research questions provide focus for the data analysis procedures:

*Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

The null hypothesis for the first research question is there is no significant relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

The null hypothesis for the second research question is there is no significant relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire.

*Question 3- Of the three characteristics of effective professional development: Collaboration, Time and Resources, and Enhancement of teacher's knowledge, which has the strongest relationship with teacher job satisfaction?*

*Question 4- Of the four areas of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development, which has the strongest relationship with teacher professional development?*

The next section provides background information on Likert items and scales, as they are an important component of the data collection for this study.

#### Likert Items and Scales

This study used a questionnaire containing Likert items to measure three variables of teachers' work environments. Teachers responded to items that measure the teachers' perception of the professional development experiences, teacher job satisfaction and their working conditions. Because of the extensive use of Likert items in this questionnaire, it

is appropriate to provide background information on Likert items and scales. First, the terms Likert scales and Likert items must be explained. A Likert item is one item on a questionnaire that includes a statement describing an issue (Likert, 1932). The statement is followed by typically five choices for the respondent to choose from. The choices typically include: “strongly agree”, “agree”, “undecided”, “disagree”, and “strongly disagree”. Also, each choice is coded with a number 1 through 5. Typically, the value “1” is assigned to the negative end of the scale and the “5” is assigned to the positive end (Likert, 1929). Edwards and Kenney (1946) explain that a Likert scale is a survey instrument consisting of a number of Likert items. The first Likert items appeared in a questionnaire created by Rensis Likert and were provided in an article summarizing the results of the questionnaire titled, “A Technique for the Measurement of Attitudes” published in 1932.

The most significant result of using a Likert scale to collect data is that a quantitative measure of an individual’s attitude toward an issue can be measured. The quantitative measure allows the research to calculate descriptive statistics of the entire population that responded to a questionnaire. A mean can be calculated to represent the center or most common attitude amongst the population. Also, a standard deviation can be calculated from the responses in order to describe the spread of the responses gathered from the population. This measure is very useful in describing whether the population has a general agreement and tightly grouped attitudes about the central common attitude or has a very diverse range of attitudes about a central common attitude. Finally, the range of responses, typically from 1 to 5, has general characteristics. At one end of the



range, there is the attitude of strongly agreeing with the issue. At the other end, there is the attitude of strongly disagreeing with the issue. And in the center is an attitude of indifferent, neutral, or undecided (Likert, 1932; Thurstone & Chave, 1929). The current study has a methodology that *used* a questionnaire of Likert items to measure teachers' perceptions of teacher professional development, teacher working conditions, and teacher job satisfaction. The instrument used in the current study will be described in detail in the following section.

### The Instrument

The instrument used in this study contains 67 items that have been combined from two sources. Sixteen items were created specifically for this study. These 16 items measure the variable called teacher professional development. The remaining 51 items were gathered from various versions of the Teacher Working Conditions Survey created by The New Teacher Center.

First is a description of the sixteen items created to measure the three categories of characteristics of professional development. The three categories of characteristics of professional development were selected based on the results of the analysis completed in the literature review. The procedures of the analysis were described in the previous chapter. Those procedures modeled the analysis completed by Guskey in his 2003 article titled, *Analyzing Lists of the Characteristics of Effective Professional Development to Promote Visionary Leadership*. The analysis discovered that the three most frequently mentioned categories of characteristics of effective professional development in the 23 lists were that professional development experiences: (1) Enhancement of teachers'

content and pedagogical knowledge, (2) Provide sufficient time and other resources, and (3) Promote collegiality and collaboration. Also, in the previous chapter, it was demonstrated that these categories of characteristics were related to the social constructivist learning model and Knowles' adult learning model. Since these categories of characteristics are mentioned most frequently in the lists of characteristics in the literature and they relate to the social constructivist learning model and an adult learning model, they are given priority before other categories of characteristics.

Furthermore, there is no universal list of characteristics of effective professional development for teachers. The literature contains at least 23 lists from various authors and organizations. This amount of information leaves designers of professional development with the task of synthesizing the information and necessitates an analysis of the twenty-three lists. The purpose of the analysis is to prioritize the large number of characteristics by counting which categories of characteristics are mentioned most frequently. The designers of professional development can use this priority of categories as an initial point to begin their evaluations of the effectiveness of existing professional development programs. Specifically, the current study collected the quantitative data on the categories from the perspective of mathematics teachers in the public secondary schools in Lake County, Illinois. This methodology produces two additional benefits. First, educators in Lake County could measure the same population in later years to determine the progress of professional development experiences over time. Second, other educators could duplicate these procedures with other populations.

The second and most important portion of the instrument used for this study was first created by the North Carolina Professional Teaching Standards Commission in conjunction with the University of California Santa Cruz and The New Teacher Center (Hirsch et al., 2008; Sioberg & Hirsch, 2006). In 2001, Michael Easley, the Governor of the State of North Carolina began an initiative to study why teachers in North Carolina were leaving the teaching profession. From this initiative was developed the North Carolina Teacher Working Conditions Survey. Since the questionnaire's creation, the questionnaire has been administered online in 11 states. Also, many of the states have continued to administer the survey every other year to monitor changes in the educational environment in the schools. Furthermore, over 215,000 teachers responded to the survey in those eleven states during the 2007-2008 school year (Hirsch et al., 2008; Sioberg & Hirsch, 2006; Teaching and Learning Conditions, 2004).

The survey has been revised and improved to fit the needs of the states that have administered the instrument. The survey continues to retain its core areas with the recent addition of one section of questions. The original five core areas of teacher working conditions that the surveyed measured were (1) Time Factors, (2) Facilities and Resources, (3) Empowerment, (4) School Leadership, and (5) Professional Development. More recent versions of the survey have retained time factors, facilities and resources, school leadership and professional development. Significant changes to the survey include changing the name of the core area called empowerment to decision-making, and by recently adding an area called community support. Additionally, the survey contains a section of demographic questions and a section of questions to measure the respondents

overall job satisfaction (Hirsch et al., 2008; Sioberg & Hirsch, 2006; Teaching and Learning Conditions, 2004). The current study serves different purposes than the research conducted by the 11 statewide initiatives. The purposes of the current study are to investigate the relationships between teacher job satisfaction, teacher professional development, and teacher working conditions. Some of the factors in the overall survey do not pertain to the current study therefore they were omitted. For example, the factor of community support is important when considering a system wide education improvement program, but it is not relevant for this study, which is focused on teacher professional development and teacher job satisfaction. Also, the survey items related to empowerment/decision making are also important in the broad investigation of school improvement plans, but the items were omitted from the survey for this research. An investigation involving teacher empowerment would add many more complications and detract from the focus of this study. The researcher has chosen to focus specifically on the relationship between teacher professional development and teacher job satisfaction. The survey items measuring the factors: (1) Time factors, (2) Facilities and Resources, (3) School Leadership, and (4) Professional Development provided direct information and enhance the understanding of the primary relationship of this study. Unfortunately, including the factors of empowerment and community support in the survey would create more complications and questions to be answered. The pursuit of those answers would require the study to move in a different direction than is intended by the researcher.

The data-collection instrument for this quantitative study was a 67-item survey consisting of four major sections. The first three sections can be further reduced to

subsections. The first section consists of 16 items pertaining to teacher professional development. The second section contains 24 items that measure the broad variable of teacher working conditions. The third section contains 20 items that provided a measure of the respondent's job satisfaction. Finally, the fourth section of the questionnaire contains seven demographic items. The table below also provides information regarding which items pertain to particular factors.

Table 2

*Four Sections of the Questionnaire*

	<b>Broad variables</b>	<b>Specific features</b>	<b>Number of items</b>
Section 1	Teacher Professional Development		16 (1-16)  All 16 items are Likert items
		Collaboration	4 items
		Resources	6 items
		Enhancing Knowledge	6 items
Section 2	Teacher Working Conditions		24 (17-40) All 24 items are Likert items
		Time	3 items
		Facilities and Resources	5 items
		School Leadership	7 items
		Professional Development	9 items
Section 3	Teacher Job Satisfaction		20 (41-60) 16 items are Likert items. 4 items are Multiple Choice
Section 4	Demographics		7 (61-67)

Next, the validity and reliability of the New Teacher Center Teacher Working Condition Survey will be described.

Two types of validity that are relevant to the current study were confirmed on the Teacher Working Conditions Survey. First “[c]ontent validity refers to the extent to which a measure represents all facets of a given social concept, in this case, teaching, leading and learning conditions” (Hirsch et al., 2008, p. 41). Second, construct validity assesses the degree to which the questionnaire measures the aspects that it was designed to measure.

In regard to the content validity, two procedures were used by the New Teacher Center to assess the content validity of the Teacher Working Conditions Survey. First, a group of 50 educational experts reviewed the proposed questions to determine which questions were the most important and most relevant to measure the five factors of teacher working conditions. The five most important factors gathered from a review of the literature are: (1) Time Factors, (2) Facilities and Resources, (3) School Leadership, (4) Teacher Empowerment, and (5) Professional Development. The second procedure required teachers to respond to the questions asking for the teacher’s perceived measure of resources or planning time. A separate study was completed to find the actual measures of resources or planning time. This second procedure was used to establish content validity; a correlation was conducted between the perceived measures and the actual measures. The correlation found the two measures to be highly correlated. As both procedures were completed, the content validity of the questionnaire was confirmed.

Next, the construct validity for the five factors was analyzed by determining if the five factors were independent. It is very probable that one questionnaire item could measure more than one factor, thereby convoluting the results. The report of this validity recognized that the five factors were not independent of each other. So there would definitely be questionnaire items that measured overlapping factors. In fact, the procedure used to establish construct validity found that the empowerment factor overlapped most frequently with the school leadership factor and professional development factor. Ultimately, the report confirmed the questionnaire's construct validity, even though some individual items measured the existence of multiple factors. Given that the questionnaire created for the current study has omitted the items related to the empowerment factor, it is possible that the construct validity has been improved. Next, the reliability of the Teacher Working Conditions Survey will be described.

Reliability for the Teacher Working Conditions Survey was tested using a split-test approach for each of the five core areas. A Cronbach's alpha was calculated for each of five factors of working conditions: time, facilities and resources, school leadership, empowerment, and professional development. The values to calculate the Cronbach's alphas were collected from a single test that was administered to several teachers. The responses were then split into two half tests based on the factor that the item measured, and the parallel items were used to calculate the Cronbach's alphas for each factor. The values for the Cronbach's alpha can range from 0 to 1. A value greater than eight tenths confirms the instrument's reliability. Four of the five measures were greater than 0.8; only the factor of time attained a measure below 0.8. These results apply specifically to

the questionnaire that was administered in Illinois to approximately 3,000 educators. However, results from questionnaires administered in the other 10 states provided similar results. The report claimed that the items related to the factor of time have been improved for future questionnaires. This concludes the description of the Teacher Working Condition Survey.

Even though the Teacher Working Conditions Survey has had tests of reliability and validity conducted, the items selected to create the questionnaire for the current study serve a different purpose. Therefore it is appropriate for additional tests of validity and reliability to be conducted for the new combined questionnaire. The following section will describe the procedures to be used to establish the validity and reliability of the questionnaire created for this study.

#### Reliability and Validity of the Questionnaire

The questionnaire used in the current study was created by combining questionnaire items. First, 16 items have been created specifically for this study to measure those characteristics of professional development that are mentioned most frequently in the literature. Second, the Teachers' Working Conditions Survey created by the New Teachers' Center has undergone a few revisions. Various versions have been administered to over 215,000 teachers in Illinois, North Carolina, Virginia, Maine, Alabama, West Virginia, Massachusetts, and Kansas. Reliability and validity have been established with this questionnaire. However, some new items have been created for the current study and have been combined with existing items from the Teachers' Working



Conditions Survey. Therefore, it is appropriate for the reliability and validity to be established for the combined questionnaire.

The reliability of the questionnaire used for the current study was established using a test–retest method. The entire questionnaire was administered twice to a group of educators. Each response to the 67 items was recorded. The questionnaire was re-administered to the same educators three weeks after the first administration. Nine educators completed both the initial questionnaire and the second administration of the same questionnaire. The calculations of the Pearson correlation coefficients for the reliability of each variable are calculated from these nine pairs of completed questionnaires.

Ten Pearson correlation coefficients were calculated from the paired questionnaire scores to measure the reliability of the questionnaire. The first Pearson correlation coefficient was calculated from the paired responses from items 1 through 16 from the questionnaire. These 16 items relate to the variable *teacher professional development*. The reliability for the variable *teacher professional development* was  $r = 0.52$ , this indicates a moderate level of reliability across time for this variable. A second Pearson correlation coefficient was calculated from items 17 through 40. These 24 items relate to the variable *teacher working conditions*. The reliability for the variable *teacher working conditions* was  $r = 0.53$ , this indicates a moderate level of reliability across time for this variable. A third Pearson correlation coefficient was calculated from items 41 through 60. These 20 items relate to the variable *teacher job satisfaction*. The reliability for the variable *teacher job satisfaction* was  $r = 0.85$ , this indicates a strong level of

reliability across time for this variable. A fourth Pearson correlation coefficient was calculated from four items within the teacher professional development section of the questionnaire. These four items relate to the variable *collaboration*. The reliability for the variable *collaboration* was  $r = 0.58$ , this indicates a moderate level of reliability across time for this variable. A fifth Pearson correlation coefficient was calculated from six items within the teacher professional development section of the questionnaire. These six items relate to the variable *time and resources*. The reliability for the variable *time and resources* was  $r = 0.52$ , this indicates a moderate level of reliability across time for this variable. A sixth Pearson correlation coefficient was calculated from six items within the teacher professional development section of the questionnaire. These six items relate to the variable *enhancing knowledge*. The reliability for the variable *enhancing knowledge* was  $r = -0.02$ , this indicates a very weak level of reliability across time for this variable. A seventh Pearson correlation coefficient was calculated from three items within the teacher working conditions section of the questionnaire. These three items relate to the variable *time factors*. The reliability for the variable *time factors* was  $r = 0.68$ , this indicates a moderate level of reliability across time for this variable. An eighth Pearson correlation coefficient was calculated from five items within the teacher working conditions section of the questionnaire. These five items relate to the variable *facilities and resources*. The reliability for the variable *facilities and resources* was  $r = 0.13$ , this indicates a weak level of reliability across time for this variable. A ninth Pearson correlation coefficient was calculated from seven items within the teacher working conditions section of the questionnaire. These seven items relate to the variable *school*

*leadership*. The reliability for the variable *school leadership* was  $r = 0.64$ , this indicates a moderate level of reliability across time for this variable. A tenth Pearson correlation coefficient was calculated from nine items within the teacher working conditions section of the questionnaire. These nine items relate to the variable *professional development*. The reliability for the variable *professional development* was  $r = 0.05$ , this indicates a weak level of reliability across time for this variable. These 10 Pearson correlation coefficients provided quantitative information regarding the questionnaire's reliability.

The validity of the questionnaire was measured using a cadre of experienced educators who either have delivered professional development to teachers or have implemented professional development programs. This cadre of educational experts judged the validity of the questionnaire.

The educational experts have certain qualifications or roles in their job's descriptions. The first qualification requires that these educational experts currently work in education or that they have had significant careers in education. Also, these experts must each hold a position in a school district that requires them to work with teachers and that understands a teacher's work environment. Third, these experts must provide teachers with professional development experiences. These experts must have provided professional development either by delivering it themselves or by hiring people who deliver professional development activities. Since these educators have job responsibilities directly relating to providing professional development opportunities, they are deemed to be practicing in the field of teacher professional development.

Therefore, they are qualified to critique the items included in the questionnaire used in this study, and for this study they are referred to as *professional development experts*.

Specifically, the experts were asked to confirm or deny whether the questionnaire measures the perceived characteristics of professional development, the magnitude of teacher job satisfaction, and core areas of teacher working conditions. Each member of the cadre received a copy of the questionnaire, a brief summary of the purposes of the study, the research questions, and a form to provide written comments about the content validity of the questionnaire. The form, which was completed by each professional development expert, was organized based on three sections of the questionnaire. For example, the form asked the professional development expert to review the 16 items created specifically for this study which measure three characteristics of teacher professional development, and then to respond to the question, “Do items 1-16 measure the characteristics of the teachers’ professional development experiences as perceived by the teacher?”

The questionnaire completed by each professional development expert had a similar question for each section. For instance, the form asked the professional development expert, “Do items 17-41 measure the level of teacher working conditions as perceived by the teacher?” A similar question was asked of the professional development expert for the items pertaining to teacher job satisfaction. Finally, the form asked the professional development experts to provide an overall judgment of the content validity of the questionnaire with respect to the purposes and research questions of the study. The content validity of the questionnaire was confirmed by the overall judgment of the

experts. Most of the experts confirmed the content validity with few or no changes to the questionnaire. Some of the experts made suggestions to change the wording or to add more description to a few of the items. In particular, multiple professional development experts made the same suggestion. The suggestions can be captured by the comments one professional development expert wrote in the remarks providing feedback to the researcher. The expert wrote, "One of the factors you are considering is enhancing teacher's content knowledge. ...none of the items directly assesses content knowledge acquisition or development in the PD work. You may want an item that directly asks 'My PD activities enhance my content knowledge for the courses I teach'". Given this suggestion, an item was added to improve the questionnaire. Other concerns about the content validity of the questionnaire related to how closely items in the third section pertaining to teacher job satisfaction related to items in the second section pertaining to teacher working conditions. This is a concern because the variables are similar. In order to make the distinction between teacher working conditions and teacher job satisfaction, clarity of the wording in the questionnaire has been improved based on the professional development experts' comments regarding the questionnaire. The respondent is instructed to answer the items numbered 17 through 40 from the perspective of current working conditions. The respondent should respond to the items rating the current state of her working conditions. In regard to the items 41 through 60, the respondent responded to the items based on how she felt these factors would affect how she felt about her job. The difference is that the variable teacher working conditions pertains to the current state of the teacher's environment. The variable teacher job satisfaction

pertains to how the teacher feels about the teacher's environment by asking if it affects the teacher's future plans. The questionnaire has been improved based on the suggestions made by the professional development experts.

Ultimately, the content validity was confirmed as multiple professional development experts agreed with the following statement made by one of the experts, "I confirm the overall content validity of the questionnaire in regard to the research questions". The next section will describe how the researcher received permissions from each school to administer the questionnaire and how the questionnaire was distributed.

#### Teacher Access to Distribute the Online Questionnaire

This section provides the details to explain the process to be used in this study to gain access to the teachers who responded to the online questionnaire. First, the researcher gathered written permissions from the appropriate school districts to contact the teachers. A letter was sent to the appropriate district or school leader asking permission for the researcher to contact the mathematics teachers at the 19 secondary schools in Lake County, Illinois. Also, the researcher followed the initial letter with a telephone call to the appropriate school leader to respond to any questions that may arise related to the proposed study. After two weeks, when the researcher had not received permission from any particular schools, a second identical letter was sent to the school leader. Again a follow-up telephone call was made to answer any questions the school leader may have had regarding the proposed study. The researcher stopped contacting any schools that did not respond after the second phone call was made.

While the researcher awaited notification from the schools, a spreadsheet was created containing lists of the schools' superintendents, principals, and mathematics departments' leaders' names, telephone numbers, and e-mail addresses. Most of this information was gathered on the schools' websites. In many cases, the e-mail addresses for each teacher in the department were gathered from the schools' website. This spreadsheet provided an organized database for the researcher to readily contact school personnel to respond to questions or to expedite the data-collection process.

Next, after receiving permission from the school leader, the researcher sent an email to the mathematics teachers inviting them to complete the online questionnaire. This email provided the teachers a link to the Opinio website that stores the questionnaire. The next section will describe the procedures used to administer the questionnaire.

#### Administering the Questionnaire

This section describes the procedures to be used to administer the 67-item questionnaire to the secondary mathematics teachers working at the public secondary schools in Lake County. After the researcher received the appropriate permissions, every secondary mathematics teacher in those public secondary schools that have granted permission to the researcher received the opportunity to complete the questionnaire. The questionnaire was administered to the teachers online using the Opinio survey software. The Opinio Survey software is an electronic web-based survey software product licensed by Loyola University Chicago (LUC). The Opinio software meets all criteria of the LUC Survey Software Checklist. The first criterion relates to recording the informed consent

given by the respondent. The Opinio software provides the researcher a time-stamped record showing that the respondent has consented to participate prior to completing the questionnaire. The second criterion requires that the transmission of information is secure. The information entered by the respondent is encrypted to protect the respondent so a third party does not see the respondent's information. Also, controls are in place to ensure that the respondent did not go to an incorrect site to complete the questionnaire. The Opinio server would have automatically re-route the respondent to the correct website to complete the questionnaire. The third criterion requires that the database where the respondent's responses are stored are secure. The researcher can only access the responses when he provides a username and password. Also, Opinio has signed confidentiality agreements with LUC preventing Opinio from improperly accessing or disclosing the information contained in those databases. The fourth criterion ensures the location of the servers that hold the databases have both physical security and environmental controls. The Opinio Survey Software meets this criterion. The fifth criterion from the LUC Survey Software Checklist requires nightly backups of the databases, and a finite time period in which a deleted dataset can still be retrieved. Again, the Opinio Software meets this criterion. Finally, the sixth criterion refers to the confidentiality of the respondent's IP address. The respondent's IP address was masked from the researcher when using the Opinio Survey Software. In summary, the LUC Survey Software Checklist was created by the Loyola University Chicago's Institutional Review Board, and the information provided confirms that the Opinio Survey Software meets all criteria set by the checklist (LUC Survey Software Checklist, 2010).



Next, a description of the teachers' participation in this study is provided. The teachers received an email asking each of them to log onto a website prepared by the researcher and to complete the online questionnaire. The only teacher participation required by the current study was the time required to complete the questionnaire. Also, the teachers remained anonymous in this data-collection process. There were no foreseeable risks involved in participating in this research beyond those experienced in everyday life. As each teacher logged on to Opinio and completed the questionnaire, the teacher was asked to give consent to complete the questionnaire. If the teacher chooses not to give consent, then the program thanked the teacher for her time and then exited the questionnaire. If a teacher choose to give consent to complete the questionnaire, the teacher clicked on the "accept" button to acknowledge the consent and the consent was be recorded. The teacher proceeded to complete the questionnaire. The questionnaire was designed so that a respondent can complete it within 20 minutes. The next section describes the format of the data and the analysis used to create the measures that addressed the four research questions of the current study.

#### Description of Data Analysis

The 67-item questionnaire was administered online to as many secondary mathematics teachers as possible at the comprehensive secondary schools in Lake County, Illinois that granted permission to participate in this study. The questionnaire consists of items that relate to three variables. First, there are 16 items that measure the teacher professional development as defined earlier in the chapter. Second, there are 24 items that measure teacher working conditions; these 24 items were gathered from the

New Teachers Center Surveys. Third, the questionnaire has 20 items that measure the magnitude of teacher job satisfaction. These items were also gathered from the New Teacher Center. Finally, there are seven demographic items that were used to disaggregate the data for data-analysis purposes.

Also, the items were matched to the characteristics or factors that the item measures. For example, the 16 items that measure teacher professional development were sorted by the categories defined by Guskey (2003). Four items measured the category of collaboration, six items measured the category of resources, and the remaining six items measured the category of enhancement of teacher's content and pedagogical knowledge. Also, 44 items gathered from the New Teacher Centers' Teacher Working Conditions Survey were sorted into factors of teacher working conditions and teacher job satisfaction. More specifically, 24 items that pertain to factors of teacher working conditions were sorted by the factors: (1) Time factors, (2) Facilities and Resources, (3) School leadership, and (4) Professional development. Three items relate to the teacher working condition factor of time. Five items measure the teacher working condition factor of facilities and resources. Seven items measure the teacher working condition factor of school leadership. Nine items measure the teacher working condition factor of professional development. An overall measure of teacher working conditions for each mathematics teacher was calculated. Also, a measure for each factor of teacher working condition was calculated. Next, 16 Likert scale items that measured teacher job satisfaction, were combined to create an overall measure of teacher job satisfaction for each mathematics teacher. Four items from the teacher job satisfaction section of the

questionnaire are not Likert scale items. These four items are multiple-choice questions. The first multiple-choice item asked the respondent to indicate her intent for the future of her educational career. The remaining three questions asked which working condition factors are most related to teacher job satisfaction and student learning.

In summary, the responses to the 67 items in the questionnaire were used to create 10 means for each teacher that measures the variables: teacher professional development, the teacher's level of teacher working conditions, and magnitude of teacher job satisfaction that the teacher reports. Three of the ten means provided an overall measure for the three broad variables. Next, three means measure the specific characteristics of high quality professional development: one mean that measures the characteristic of collaboration, one that measures time and resources, and a third mean that measures enhancement of teacher's content and pedagogical knowledge. Also, four means were calculated to measure the four factors of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development. Also, a demographic profile for each mathematics teacher was collected from the seven items in the last section of the questionnaire.

An Excel spreadsheet was created to store the data recorded from the questionnaire. The spreadsheet sorted the data by school. Individual teacher responses remained anonymous. Next, the responses to the 67 items from the teachers of each school were listed. Furthermore, the items were categorized into the appropriate sections as described previously. Next, a description of the statistics to be calculated to provide answers to the four research questions.

First, using the mathematics teacher as a unit of analysis, a mean of the teacher's responses to the 16 items that measure teacher professional development was calculated. This mean provided a quantitative measure of the variable teacher professional development. The mean could range from one to five, where one is a very low perception of quality and five is a very high perception of quality. Similar means were calculated for each of the three categories of professional development. A mean for each mathematics teacher was calculated to measure the variable of collaboration, another mean was calculated to measure the variable of time and resources, and finally a mean was calculated to measure the variable enhancement of teacher's content and pedagogical knowledge.

Next, a mean of the teachers' responses to the 24 items from the teacher working conditions area of the questionnaire was calculated for each mathematics teacher. This mean provides a quantitative measure of the mathematics teacher's level of working conditions. The mean has the range from one to five, where one is a very low level of teacher working conditions and five is a very high level of teacher working conditions. Similar means were calculated for each of the four factors of teacher working conditions. A mean for each of the following factors was calculated (1) time factors; (2) facilities and resources; (3) school leadership; and (4) professional development. Finally, a mean for the magnitude of teacher job satisfaction for each mathematics teacher was calculated.

The next section of the questionnaire asks questions that measure the level of teacher job satisfaction. A mean for each teacher was calculated from 16 Likert items.

The mean could range from one to five, where one is a very low magnitude of job satisfaction and five is a very high magnitude of teacher job satisfaction.

In summary, 10 means were calculated from the data for each of the teachers who complete the online questionnaire. One mean provides an overall measure of teacher professional development. Three means measure the categories of professional development. One mean provides an overall measure of teacher working conditions for each mathematics teacher. Four means measure the factors of teacher working conditions. Finally, one mean provides an overall measure of teacher job satisfaction for each mathematics teacher.

Also, these statistics were separated by school based on the low-income rate as reported in the 2010 Illinois School Report Card. Previously, the effects of economic variables on teacher job satisfaction were discussed; therefore it is appropriate to analyze the questionnaire data from those schools that reported low-income rates of at least 40% separately from the remaining schools that reported low-income rates of at most 20%. The reader may notice that a portion of the distribution of low-income rates was omitted from the reported results. There are no results to be reported from teachers working at schools that report low-income rates between 20% and 40%. This omission occurred as all teachers who responded to the online questionnaire of this study worked at either a school that reported low-income rates below 20% or at schools that reported low-income rates above 40%. There was no data collected from schools in this middle range of low-income levels. This significant difference in the demographics of the schools further justifies disaggregating the data collected from these various schools.

The data-collection procedures described in the current study provide designers of professional development programs with a method for evaluating their programs in relation to the characteristics of effective professional development in the literature. The next section describes a method used to investigate the relationships between the three variables at the participating secondary Lake County schools.

### First and Second Research Questions

The first and second research questions examine the broad variables of this current study. First, three means were calculated for each mathematics teacher based on her responses to the online questionnaire. As mentioned previously, each teacher's responses to the 16 items pertaining to the professional development characteristics was used to create the first mean. Next, each teacher's responses to the 24 items pertaining to teacher working conditions were used to create the second mean. Finally, each teacher's responses to the 16 items pertaining to teacher job satisfaction were used to create the third mean. A Pearson correlation coefficient was calculated from the means to determine the strength of the two relationships. The correlations were used to answer the first and second research questions of the current study.

*Research Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

The null hypothesis for the first research question is there is no significant relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

The null hypothesis for the second research question is there is no significant relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire.

### The Hypothesis Tests

The first and second research questions use hypothesis tests to determine if the relationships in each question exist and if the relationships are statistically significant. The Pearson Correlation Coefficient measure the relationship. This correlation coefficient was used to calculate the test statistic for the hypothesis test. As stated previously, the Pearson Correlation Coefficient is calculated from the means from the Likert items from the questionnaire. A mean from the items related to professional development and teacher job satisfaction for each mathematics teacher was calculated. The null hypothesis for the hypothesis test is that there is no relationship between the means found for the variables teacher professional development and teacher job satisfaction. More specifically, the null hypothesis relates to a correlation coefficient close to zero. The alternate hypothesis expects the correlation coefficient to be different than zero. The researcher did not anticipate the direction of the relationship between the two variables; the researcher provides that the alternate hypothesis relates to some relationship. Also, in order to determine if the relationship is statistically significant, this

study used a level of significance of 5%. The research questions and hypotheses are stated in formal terms below.

*Research Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

A Pearson correlation coefficient has been analyzed to reject or fail to reject the null hypothesis that there is no significant relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire.

A hypothesis of the second research question was tested by calculating a Pearson Correlation Coefficient based on the variables teacher professional development and teacher working conditions. The null hypothesis anticipated no relationship between the two variables. Similar to the first hypothesis test, a level of significance of 5% was used to determine if the results are statistically significant. The research questions and hypotheses are stated in formal terms below.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

A Pearson correlation coefficient has been analyzed to reject or fail to reject the null hypothesis that there is no significant relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire.



The next section describes the data analysis that was used to answer the third and fourth research question.

### The Third Research Question

The third research question asks about the relationship of specific characteristics of professional development that relate to teacher job satisfaction.

*Research Question 3- Of the three characteristics of effective professional development: Collaboration, Time and Resources, and Enhancement of teacher's knowledge, which has the strongest relationship with teacher job satisfaction?*

A Pearson correlation coefficient was calculated for each characteristic of effective professional development compared to the mathematics teachers' means for teacher job satisfaction. For example, four Likert items on the questionnaire measure the variable collaboration. A mean for the four items was calculated for each mathematics teacher. The mean for each characteristic was paired to create an ordered pair with the teacher's mean from the variable teacher job satisfaction. The Pearson correlation coefficient was calculated from these ordered pairs. Similar to the means for the first and second research questions, an ordered pair for each characteristic was created. Three correlation coefficients were calculated in this manner for the three characteristics of professional development.

The strongest correlation coefficient provided the answer to the third research question. An equivalent analysis was completed using the four factors of teacher working conditions in relation to the fourth research question.

### The Fourth Research Question

*Research Question 4- Of the four areas of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development, which has the strongest relationship with teacher professional development?*

Four Pearson correlation coefficients were calculated for each of the four factors of teacher working conditions as they relate to the perceived quality of professional development. The four factors are (1) time factors; (2) facilities and resources; (3) school leadership; and (4) professional development. For example, a mean for the items that pertain to “time factors” was calculated for each mathematics teacher. The mean was associated with the mean of each teacher from the overall measure of teacher professional development. The Pearson correlation coefficient was calculated for this relationship. Three additional correlation coefficients were calculated from the three remaining factors of teacher working conditions against teacher professional development. Again, the highest of the four correlation coefficients provided the answer to the fourth research question.

### Brief Summary

The purpose of this study was to investigate the relationships between teachers’ perceptions of the following variables: teacher professional development, teacher job satisfaction, and teacher working conditions. Four research questions have been created to guide the investigations of these relationships.

The first research question of this study examined the relationship between the teacher professional development and the magnitude of teacher job satisfaction. The

second research question of the study examined the relationship between the teacher professional development and teacher working conditions. The third research question of the study investigated which of the three characteristics of effective professional development: (1) Collaboration, (2) Time and Resources, and (3) Enhancement of teacher's content and pedagogical knowledge have the strongest relationship to teacher job satisfaction. A final research question of the study investigated which of the four areas of working conditions: (1) Time factors, (2) Facilities and Resources, (3) School Leadership, and (4) Professional Development, has the strongest relationship with high quality professional development.

The current study used a quantitative approach to data-collection and provided answers to the four research questions of this study. The secondary mathematics teachers of the 19 secondary schools in Lake County had the opportunity to complete a 67-item questionnaire. The mathematics teachers were the units of analysis.

The questionnaire consists of 67 items spread over four sections. The first of four sections of the questionnaire consists of 16 items that measure the existence of three characteristics of effective professional development: (1) Enhancement of teacher's pedagogical and content knowledge, (2) Collaboration, and (3) Time and Resources. The remaining three sections of the questionnaire consisted of items collected from the Teachers Working Conditions Survey created by the New Teacher Center. The three sections include 24 items measuring teacher working conditions, 20 items measuring teacher job satisfaction, and seven demographic items.

Furthermore, the current study investigated two relationships among the following variables: teacher professional development, magnitude of teacher job satisfaction, and level of teacher working conditions of comprehensive secondary schools in Lake County. These relationships were measured based on the means for each mathematics teacher's responses to the 67 items on a questionnaire.

Additionally, Turner (2007) and Whitehead (2006) determined that the economic status of schools had significant effects on the levels of teacher job satisfaction as reported by the teachers. Therefore, the statistics calculated from the questionnaire results were disaggregated based on economic variables of the schools in the population. This additional level of analysis reduced the effects of confounding variables and allowed a clearer understanding of the relationship between teacher professional development programs and teacher job satisfaction.

The next chapter provides the results related to the research questions.

## CHAPTER IV

### RESULTS

#### Summary of the Study

The purpose of this study was to investigate the relationships between the variables teacher professional development, teacher job satisfaction, and teacher working conditions. This study used a quantitative methodology that administered an online questionnaire containing 67 items to approximately 300 secondary mathematics teachers in Lake County, Illinois. The teachers responded to Likert items and a few multiple-choice questions. The responses were used to quantify: the teachers' perception of the quality of professional development programs that were provided to them by their schools; the magnitude of the teachers' job satisfaction; and finally, a rating for teacher working conditions. Relationships between these variables were measured using Pearson correlation coefficients. This chapter provides the results to the four research questions that guided this study.

It is important to explain that the results were separated by schools based on the low-income rate as reported in the 2010 Illinois School Report Card. Previously, the effects of economic variables on teacher job satisfaction were discussed; therefore it is appropriate to analyze the questionnaire data from those schools that reported low-income rates of at least 40% separately from the remaining schools that reported low-income rates of at most 20%. As mentioned previously, the reader may notice that a

portion of the distribution of low-income rates was omitted from the reported results.

There are no results to be reported from teachers working at schools that report low-income rates between 20% and 40%. This omission occurred as all teachers who responded to the online questionnaire of this study worked at either a school that reported low-income rates below 20% or at schools that reported low-income rates above 40%.

### Research Questions

*Research Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

#### Research Question 1 Null Hypothesis

A Pearson correlation coefficient has been analyzed to reject or fail to reject the null hypothesis that there is no significant relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

#### Research Question 2 Null Hypothesis

A Pearson correlation coefficient has been analyzed to reject or fail to reject the null hypothesis that there is no significant relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire.

*Research Question 3- Of the three characteristics of effective professional development: Collaboration, Time and Resources, and Enhancement of teacher's knowledge, which has the strongest relationship with teacher job satisfaction?*

The third research question did not necessitate a test of significance and therefore did not need a null hypothesis. The third research question required the Pearson correlation coefficients between three relationships to be compared. The Pearson correlation coefficient farthest from zero represented the strongest of the three relationships considered. The three relationships in question are: 1) The relationship between the measure of teacher job satisfaction and the characteristic of teacher professional development called collaboration, 2) The relationship between the measure of teacher job satisfaction and the characteristic of teacher professional development called time and resources, and 3) The relationship between the measure of teacher job satisfaction and the characteristic of teacher professional development called enhancement of teachers' knowledge.

*Research Question 4- Of the four areas of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development, which has the strongest relationship with teacher professional development?*

Similar to the third research question, the fourth research question did not necessitate a test of significance and therefore did not need a null hypothesis. The fourth research question compared the Pearson correlation coefficients between four relationships. The Pearson correlation coefficient farthest from zero represented the strongest of the four relationships considered. The four relationships in question are: 1)

The relationship between the measure of teacher professional development and the specific area of teacher working condition referred to as time factors, 2) The relationship between the measure of teacher professional development and the specific area of teacher working condition referred to as resources and facilities, 3) The relationship between the measure of teacher professional development and the specific area of teacher working condition referred to as school leadership, and 4) The relationship between the measure of teacher professional development and the specific area of teacher working condition referred to as professional development.

### Results

*Research Question 1- Is there a relationship between teacher professional development and the magnitude of teacher job satisfaction as measured by a Likert scale questionnaire?*

Table 3

*Correlation Between Teacher Professional Development and Teacher Job Satisfaction from all Schools*

<b>Group</b>	<b>N</b>	<b>Pearson Correlation Coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>All schools</b>	64	0.24	1.20	0.054

Table 3 provides the results of the test for correlation from all schools. The Pearson correlation coefficient for the relationship between the variables measuring teacher professional development and teacher job satisfaction is  $r = 0.24$ . The reader is reminded that the Pearson correlation coefficient ranges from -1.0 to 1.0. A correlation



coefficient near -1.0 indicates that the two variables have a strong negative linear relationship, and a value approximately equal to 1.0 represents a strong positive linear relationship. Also, a Pearson correlation coefficient that is approximately equal to zero represents no relationship between the two variables. The value of  $r = 0.24$  indicates only a slightly positive relationship between the two variables measuring teacher professional development and teacher job satisfaction. The two tailed test of significance for the correlation provides  $r = 0.24$ ,  $p \approx 0.054$  when  $n = 64$ ,  $r(df) = 62$  and this result is not significant at the 5% level of significance. Therefore, the null hypothesis is not rejected. The Pearson correlation coefficient of  $r = 0.24$  is likely to occur by chance and not because of a linear relationship that exists between the two variables teacher professional development and teacher job satisfaction. Next, the results will be reported from the responses gathered from teachers who work at the schools with low-income rates less than 20%.

Table 4

*Correlation Between Teacher Professional Development and Teacher Job Satisfaction from Schools with Low-Income Rates Less Than 20%*

Group	n	Pearson Correlation Coefficient	t-statistic	p-value
Low Income Rates less than 20%	48	0.14	0.94	0.35

( $p > 0.05$ )

Table 4 lists the results of the test for correlation from schools that have low-income rates less than 20%. The Pearson correlation coefficient for the relationship

between the variables measuring teacher professional development and teacher job satisfaction is  $r=0.14$ . The Pearson correlation coefficient of  $r=0.14$  indicates only a slightly positive relationship between the two variables teacher professional development and teacher job satisfaction. The two tailed test of significance for the correlation provides  $r=0.14$ ,  $p \approx 0.35$  when  $n=48$ ,  $r(df)=46$  and this result is not significant at the 5% level of significance. Therefore, the null hypothesis is not rejected. The Pearson correlation coefficient of  $r=0.14$  is likely to occur by chance and not because of a linear relationship that exists between the two variables teacher professional development and teacher job satisfaction from the teachers working at schools with low-income rates less than 20%. Next, the results will be reported from the responses gathered from teachers who work at the schools with low-income rates greater than 40%.

Table 5

*Correlation Between Teacher Professional Development and Teacher Job Satisfaction from Schools with Low-Income Rates Greater Than 40%*

Group	n	Pearson Correlation Coefficient	t-statistic	p-value
<b>Low Income Rates greater than 40%</b>	16	0.22	0.83	0.42

( $p>0.05$ )

Table 5 lists the results of the test for correlation from schools with reported low-income rates greater than 40%. The Pearson correlation coefficient of  $r=0.22$  indicates a slightly positive linear relationship between the two variables measuring teacher professional development and the magnitude of teacher job satisfaction. The two tailed

test of significance for the correlation provides  $r=0.22$ ,  $p \approx 0.42$  when  $n=16$ ,  $r(df)=14$  and this result is not significant at the 5% level of significance. Therefore, the null hypothesis is not rejected. The Pearson correlation coefficient of  $r=0.22$  is likely to occur by chance and not because of a linear relationship that exists between the two variables teacher professional development and teacher job satisfaction from the teachers working at the schools with low-income rates greater than 40%. Next, the results will be provided for the second research question.

*Research Question 2- Is there a relationship between teacher professional development and teacher working conditions as measured by a Likert scale questionnaire?*

Table 6

*Correlation Between Teacher Professional Development and Teacher Working Conditions from all Schools*

<b>Group</b>	<b>N</b>	<b>Pearson Correlation Coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>All schools</b>	64	0.77	9.56	$P<0.0001$

( $p>0.05$ )

Table 6 lists the results of the test for correlation from all schools. The Pearson correlation coefficient for the relationship between the variables measuring the teacher professional development and teacher working conditions is  $r=0.77$ . The value of  $r=0.77$  indicates a strong positive linear relationship that as a teacher expresses high ratings for the variable teacher professional development there is a linear relationship with high ratings for teacher working conditions. The two tailed test of significance for the

correlation provides  $r=0.77$ ,  $p<0.0001$  when  $n=64$ ,  $r(df)=62$  and this result is significant at the 5% level of significance. Therefore, the null hypothesis is rejected. There is sufficient evidence of a linear relationship between these variables from the teachers working at the schools that completed the questionnaire. Next, the results will be reported from the responses gathered from teachers who work at the schools with low-income rates less than 20%.

Table 7

*Correlation Between Teacher Professional Development and Teacher Working Conditions from Schools with Low-Income Rates Less Than 20%*

Group	n	Pearson Correlation Coefficient	t-statistic	p-value
Low Income Rates less than 20%	48	0.78	8.44	<0.0001

( $p<0.05$ )

Table 7 lists the results of the test for correlation from schools that report low-income rates less than 20%. The Pearson correlation coefficient for the relationship between the variables measuring the variable teacher professional development and teacher working conditions is  $r=0.78$ . The value of  $r=0.78$  indicates a strong positive linear relationship between the two variables. The two tailed test of significance for the correlation provides  $r=0.78$ ,  $p<0.0001$  when  $n=48$ ,  $r(df)=46$  and this result is significant 5% level of significance. Therefore, the null hypothesis is rejected. There is sufficient evidence of a linear relationship between these variables from the teachers working at schools with low-income rates less than 20%. Next, the results will be reported from the

responses gathered from teachers who work at the schools with low-income rates greater than 40%.

Table 8

*Correlation Between Teacher Professional Development and Teacher Working Conditions from Schools with Low-Income Rates Greater Than 40%*

Group	n	Pearson Correlation Coefficient	t-statistic	p-value
<b>Low Income Rates greater than 40%</b>	16	0.66	3.31	<0.01

( $p < 0.05$ )

Table 8 lists the results of the test for correlation from schools with reported low-income rates greater than 40%. The Pearson correlation coefficient of  $r=0.66$  indicates a moderately positive linear relationship between the two variables measuring teacher professional development and teacher working conditions. The two tailed test of significance for the correlation provides  $r=0.66$ ,  $p < 0.01$  when  $n=16$ ,  $r(df)=14$  and this result is statistically significant at the 5% level of significance. Therefore, the null hypothesis is rejected. There is sufficient evidence of a relationship between the variables teacher professional development and teacher working conditions from the teachers working at the schools with low-income rates greater than 40%. Next, the results for the third research question will be provided.

*Research Question 3- Of the three characteristics of effective professional development: Collaboration, Time and Resources, and Enhancement of teacher's knowledge, which has the strongest relationship with teacher job satisfaction?*

Table 9

*The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Three Characteristics of Effective Teacher Professional Development*

	N=64	
	Pearson Correlation Coefficient	p-value
Teacher Job Satisfaction vs. Collaboration for professional development	0.14	0.27
Teacher Job Satisfaction and Resources for professional development	0.18	0.15
Teacher Job Satisfaction and Professional development that enhances teachers' knowledge	0.24	0.06

Table 9 provides the Pearson correlation coefficients from the data collected from all the schools. The relationship between the variable of *teacher job satisfaction* and the variable of *enhancement of teachers' knowledge* had the strongest linear relationship as compared to the other two relationships. This result is meaningful for designers of professional development programs. The teachers have indicated when they receive professional development experiences that feature an opportunity to learn more about their content area and methods to teach the content of their classes; they also report higher magnitudes of job satisfaction. The secondary mathematics teachers who responded to the questionnaire have indicated that they enjoy opportunities to discuss and

learn about their content area over professional development opportunities involving topics that do not relate to their specific content area.

Table 10

*The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Characteristics of Effective Teacher Professional Development from Schools with Low-Income Rates Less Than 20%*

	n=48	
	Pearson Correlation Coefficient	p-value
Teacher Job Satisfaction vs. Collaboration for professional development	0.00	1.00
Teacher Job Satisfaction and Resources for professional development	0.16	0.28
Teacher Job Satisfaction and Professional development that enhances teachers' knowledge	0.16	0.28

Table 10 provides the Pearson correlation coefficients from teachers who work at the schools that report low-income rates less than 20%. The relationship between the variable *teacher job satisfaction* and the variable *enhancement of teachers' knowledge* along with the relationship between *teacher job satisfaction* and *time and resources* for professional development had the strongest linear relationships as compared to the third relationship between *teacher job satisfaction* and *collaboration*. Similar to the results collected from the general population of this study, the teachers who work at the schools that report low-income rates less than 20% indicate more enjoyment in their jobs when

they receive professional development experiences that involve topics that are closely related to the courses they teach and are properly resourced.

Table 11

*The Pearson Correlation Coefficients Between the Variables Teacher Job Satisfaction and Characteristics of Effective Teacher Professional Development from Schools with Low-Income Rates Greater Than 40%*

	n=16	
	Pearson Correlation Coefficient	p-value
Teacher Job Satisfaction vs. Collaboration for professional development	0.31	0.24
Teacher Job Satisfaction and Time and Resources for professional development	-0.10	0.71
Teacher Job Satisfaction and Professional development that enhances teachers' knowledge	0.30	0.26

Table 11 provides the Pearson correlation coefficients from teachers who work at the schools that report low-income rates greater than 40%. There are two relationships that were measured with very similar but weak Pearson correlation coefficients. The relationship between *teacher job satisfaction* and the variable *collaboration* was equally strong as the relationship between *teacher job satisfaction* and the variable *enhancement of teachers' knowledge*. These positive and similar measures of correlations indicate that as one of the variables of the relationship increases such as the teacher's measure of job



satisfaction, then there is a related increase in the teacher's perception of the characteristic of collaboration in regard to the professional development experience of the teacher. The same relationship can be noted between the variables measuring teacher job satisfaction and the professional development characteristic of enhancement of teachers' knowledge. The third relationship between teacher job satisfaction and time and resources was negative and less extreme as compared to the other two relationships. This correlation indicates that as the teacher's measure of job satisfaction increases, then there is an associated decrease in the variable of time and resources provided during the teacher's professional development experience.

The reader may notice as Tables 10 and 11 are compared, that there are differences between particular Pearson correlation coefficients measuring the same relationship calculated for the different subgroups. While considering the correlation for the variables teacher job satisfaction and collaboration for the subgroup of teachers from schools with low-income rates less than 20% as compared to the correlation from the teachers working at schools with low-income rates greater than 40%, there is a 0.31 difference in these correlation coefficients. Also, there is a 0.26 difference in the correlation coefficients measuring the relationship between the variables teacher job satisfaction and time and resources for professional development. The differences between these correlations will be explored in the last chapter of this study. The next section will provide the results for the fourth research question.

*Research Question 4- Of the four areas of teacher working conditions: Time factors, Facilities and Resources, School leadership, and Professional development, which has the strongest relationship with teacher professional development?*

Table 12

*The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Four Areas of Teacher Working Conditions from all Schools*

	N=64	
	Pearson Correlation Coefficient	p-value
Teacher Professional Development and Teacher Working Condition area of time factors	0.55	<0.0001*
Teacher Professional Development and Teacher Working Condition area of facilities and resources	0.51	<0.0001*
Teacher Professional Development and Teacher Working Condition area of school leadership	0.64	<0.0001*
Teacher Professional Development and Teacher Working Condition area of professional development	0.76	<0.0001*

\*Significant at 5%

Table 12 provides the Pearson correlation coefficients calculated from the data collected from all the schools. The relationship between the area of teacher working condition specific to professional development and the variable teacher professional development had the strongest linear relationship as compared to the other three areas of teacher working conditions. This result is not a surprising given the items on the

questionnaire was related to professional development. The items of the questionnaire related to the variable teacher professional development asked teachers to rate whether their professional development experiences featured collaboration, time and resources, and enhancement of teachers' content and pedagogical knowledge. Recall, those sixteen items were created specifically for this study. The items measuring professional development in the teacher working conditions section of the questionnaire provide a more general measure of professional development experiences. The resulting relationship between the two measures of professional development demonstrates consistency of the measure of quality of professional development. The items taken from the Teacher Working Conditions survey support the 16 items created specifically for this study.

A second meaningful aspect to be noted relating to the results for this research question is the strength of all four areas of teacher working conditions as compared to teacher professional development. All four Pearson correlation coefficients indicate moderate or strong relationships. In particular, the variable measuring school leadership had the second strongest relationship of the group. Also, it can be noted by the p-values that each of the correlation coefficients are statistically significant at the 5% level of significance. This result justifies the need for additional research to investigate more specific factors of school leadership and its relationship with teacher professional development.

Table 13

*The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Areas of Teacher Working Conditions from Schools with Low-Income Rates Less Than 20%*

	n=48	
	Pearson Correlation Coefficient	p-value
Teacher Professional Development and Teacher Working Condition area of time factors	0.53	<0.0001*
Teacher Professional Development and Teacher Working Condition area of facilities and resources	0.42	0.002*
Teacher Professional Development and Teacher Working Condition area of school leadership	0.68	<0.0001*
Teacher Professional Development and Teacher Working Condition area of professional development	0.79	<0.0001*

\*Significant at 5%

Table 13 provides the Pearson correlation coefficients from the data collected from the schools that reported low-income rates less than 20%. The relationship between the variable of professional development from the teacher working conditions section of the questionnaire and the variable teacher professional development had the strongest linear relationship as compared to the other three areas of teacher working conditions. These results are very similar to the results of the whole population that responded to the questionnaire. These results confirm the results from Table 12. Next, the results from

teachers working at schools that report low-income rates greater than 40% will be provided.

Table 14

*The Pearson Correlation Coefficients Between the Variables Teacher Professional Development and Areas of Teacher Working Conditions from Schools with Low-Income Rates Greater Than 40%*

	n=16	
	Pearson Correlation Coefficient	p-value
Teacher Professional Development and Teacher Working Condition area of time factors	0.53	0.035*
Teacher Professional Development and Teacher Working Condition area of facilities and resources	0.52	0.039*
Teacher Professional Development and Teacher Working Condition area of school leadership	0.46	0.073
Teacher Professional Development and Teacher Working Condition area of professional development	0.64	0.008*

\*Significant at 5%

Table 14 provides the results from teachers who work at schools that reported low-income rates greater than 40%. The relationship between the area of teacher working conditions specific to professional development and the variable teacher professional development had the strongest linear relationship as compared to the other three areas of teacher working conditions. It was observed that each of the areas of

Teacher Working Conditions: a) Time factors, b) Resources and Facilities, c) School leadership, and d) Professional development had moderate relationships with the variable teacher professional development. This was true based on the responses from all teachers regardless of the schools' reported low-income rates. However, one observation that is made from all of the results pertaining to the fourth research question differentiates the results from the schools that report higher levels of low-income rates. The Pearson correlation coefficients are not as strong as the results from schools that report lower levels of low-income rates. At the schools with higher levels of low-income students, there exist other variables commingled with teacher professional development and the specific areas of teacher working conditions called professional development and school leadership. Also, when considering two of the four relationships there is a large difference between the correlation coefficients calculated based on the two subgroups. Specifically, the measures based on the relationship between the variables teacher professional development and school leadership; there was a 0.24 difference in the Pearson correlation coefficients between the two subgroups. Also, there is a difference of 0.15 between the correlation coefficients measuring the relationship between teacher professional development and the teacher working condition area of teacher working when the two subgroups are compared. These differences will be explored in more detail in the final chapter of this study. As these differences demonstrate, it was advantageous for this study to separate the results based on the low-income rate categories of the schools.

## CHAPTER V

### CONCLUSION

#### Purpose of the Study

The purpose of this study was to investigate the relationships between teachers' perceptions of the following variables: characteristics of teacher professional development, teacher job satisfaction, and teacher working conditions. Furthermore, this study investigated the relationships between characteristics of teacher professional development and teacher job satisfaction, as well as, an examination of four areas of teacher working conditions as they relate to teacher professional development. Four research questions have been created to guide the investigations of these relationships.

An online questionnaire was administered to secondary mathematics teachers working at the comprehensive public secondary schools in Lake County, Illinois. Sixty-five of the 281 teachers provided responses to the 67-item questionnaires. The response rate for the study was approximately 23%.

#### Findings

This study was guided by four research questions. Also, the responses from the questionnaire used to answer the four research questions were separated based on the schools' low-income rates as reported in the school's Illinois School report Card. Pearson correlation coefficients were calculated from the data collected measuring the teachers' ratings of these variables based on the Likert items.

The first research question investigated the relationship between the two variables termed *teacher professional development* and *teacher job satisfaction*. There was one null hypothesis related to this research question. A test of significance for the Pearson correlation coefficient was conducted and found that the relationship was not significant at a 5% level of significance. Therefore, the null hypothesis of the first research question was not rejected at the 5% level of significance. The data collected from the online questionnaires indicates that there is no statistically significant relationship between the two variables teacher professional development and teacher job satisfaction.

First, it is possible that the results related to teacher job satisfaction were not significant because most teachers reported that they were satisfied with the positions they currently hold. The responses from the teachers were consistent throughout the group. The questionnaire did not differentiate ratings of teacher job satisfaction between teachers; therefore the lack of variability made it difficult to find a relationship to any other variable.

Second, there exist many factors that relate to the satisfaction teachers experience with their current positions. One of the items of the questionnaire asked whether the retirement options available to the teacher had an effect on the teacher's job satisfaction. Another item on the questionnaire asked whether or not salary had an effect on the teacher's job satisfaction. An additional reason that there was not a significant relationship between the variable of teacher job satisfaction and the teachers' perceived quality of professional development is that other factors relate to a teacher's level of satisfaction besides the professional development program the teacher experiences. The



single factor of professional development could be diluted in relation to the teacher's overall job satisfaction by the other factors.

The second research question investigated the relationship between teacher professional development and teacher working conditions. There was one null hypothesis related to this research question. Again, the teachers' responses were separated based on the school's reported low-income rate. Three Pearson correlation coefficients were calculated since the data was sorted in three ways. The first Pearson correlation coefficient was calculated from all the response. The second Pearson correlation coefficient was calculated from those teachers who work at schools that reported a small number of low-income students. The third Pearson correlation coefficient was calculated from responses from teachers who worked at schools that reported high levels of low-income students. Three tests of significance for Pearson correlation coefficients were conducted and found that the relationships were significant at a 5% level of significance for the overall group of 64 teachers and the two subgroups. Therefore, the null hypothesis of the second research question is rejected at the 5% level of significance. The data collected from the online questionnaires indicates that there is a statistically significant relationship between the two variables. A test of significance for a Pearson correlation coefficient was conducted and found that the relationship was significant at a 5% level of significance. This significant finding occurred in the overall group of 64 teachers and the two subgroups of teachers. This is an important result, as teachers perceive the quality of professional development alongside their work environment. The teachers perceive that a quality professional development program is

intertwined in their workday. This relationship was confirmed at schools with varying social economic status.

The third research question seeks to find which of the three categories of characteristics of effective professional development had the strongest positive relationship with teacher job satisfaction. The answer to this research question differed based on the low-income rate of the school where the teacher worked. From the schools where the low-income rate was less than 20%, the Pearson correlation coefficient was the same for two relationships. First, the Pearson correlation coefficient measuring the relationship between professional development characteristics of time and resources and the variable teacher job satisfaction was  $r=0.16$ . Second, the relationship between the professional development characteristics of enhancing teachers' knowledge and teacher job satisfaction produced a Pearson correlation coefficient of  $r=0.16$ . However; the results from the schools where the low-income rate was greater than 40%, two relationships had Pearson correlation coefficients of approximately  $r=0.30$ . The relationship between *collaboration* and *teacher job satisfaction* and the relationship between enhancing teachers' pedagogical and content knowledge and teacher job satisfaction were equivalent, but moderately positive in both cases. Additionally results are realized when the Pearson correlation coefficients are compared across the subgroups of teachers.

Referring back to the comments made in Chapter IV about the Tables 10 and 11, the difference of the correlation coefficients measuring the relationship between teacher job satisfaction and collaboration is quite large.

The teachers who worked at schools reporting low-income rates greater than 40% provided responses that led to a Pearson correlation coefficient for these variables was  $r=0.31$ . The teachers who worked at schools reporting low-income rates less than 20% led to a Pearson correlation coefficient for the two variables teacher job satisfaction and collaboration was zero. It is interesting that the teachers from the schools with higher levels of low-income students demonstrated a stronger relationship between collaboration during teacher professional development activities and teacher job satisfaction while the teachers from schools with smaller proportions of low-income students demonstrated little or no relationship between the same two variables. It is possible that the teachers from the more low-income schools need the collaboration to discuss the difficulties with teaching in a school with more hardship. Those teachers may get a greater sense of satisfaction based on those collaborative meetings relative to teachers in schools with lower low-income rates.

Another difference between correlation coefficients related to the third research question exists when analyzing the relationship between the variables teacher job satisfaction and time and resources related to teacher professional development. The difference of 0.26 for the Pearson correlation coefficients occurs when comparing the values from the two subgroups. This difference exists between the correlation coefficient of  $r=0.16$  for the subgroup of teachers working at schools with reported low-income rates less than 20% and the correlation coefficient of  $r=-0.10$  from the subgroup of teachers working at schools reporting low-income rates greater than 40%. The two correlation coefficients demonstrate relationships that work in opposite directions; however, both of

the correlations coefficients are weak. Also, none of these individual Pearson correlation coefficients are statistically significant. Without further data collection or investigation, it is difficult to make a statement about the meaning of this difference of correlation coefficients.

The fourth research question investigated which of the four areas of teacher working conditions had the strongest relationship with teacher professional development. The four areas include: 1) Facilities and Resources, 2) Time factors, 3) School Leadership, and 4) Professional Development. The results showed that the area of teacher working conditions called professional development had the strongest positive relationship with the variable teacher professional development as measured by the Pearson correlation coefficients. In fact, the Pearson correlation coefficient calculated from the responses for the variables teacher professional development and the teacher working conditions area called professional development was  $r=0.79$  for the teachers from schools that reported low-income rates less than 20% and the Pearson correlation coefficient was  $r=0.64$  for the teachers from schools that reported low-incomes rates greater than 40%. However, it was also observed that the other three areas of teacher working conditions have moderately strong positive relationships with teacher professional development. The Pearson correlation coefficients for the other three relationships range from  $r=0.42$  to  $r=0.68$  for all the schools regardless of the reported low-income rates. These Pearson correlation coefficients support a relationship across all areas of teacher working conditions with teacher professional development. As a teacher

rates his working conditions, this same teacher gives a similar rating for his perceived quality of professional development.

Referring back to the comments made in Chapter IV about the Tables 13 and 14, the difference of the correlation coefficients measuring the relationship between teacher professional development and school leadership is quite large. The responses from teachers working at school that reported low-income rates less than 20% led to a Pearson correlation coefficient of  $r=0.68$  for the variable teacher professional development and school leadership. The teachers from schools reporting higher proportions of low-income students provided responses that led to a Pearson correlation coefficient measuring the same relationship of  $r=0.46$  for a difference of 0.22 between the two correlation coefficients. It is possible that the teachers working at school with lower proportions of low-income students reported strong school leadership along with the perception of high quality professional development. The teachers from schools with higher proportions of low-income students may confirm the moderately positive linear relationship between school leadership and teacher professional development, but not at the same intensity as teachers from schools reporting lower proportions of low-income students. Some of the teachers from the low-income schools rated their school leaders less highly as the teachers from schools reporting lower proportions of low-income students. Note the difference between the means for the variable school leadership reported in Table 15. Therefore the difference of the correlation coefficients between the two subgroups of teachers could be explained by the teachers' ratings for the school leaders. It is possible that the teachers who perceive to have high quality teacher professional development

experiences relate that to strong school leader who provide the teacher professional development. There is another difference between correlation coefficients calculated from the two subgroups that relate to the fourth research question. The Pearson correlation coefficients that measured the relationship between the variable teacher professional development, as measured by the 16 items created specifically for this questionnaire, and the variable professional development, as measured by the nine items from the teacher working conditions section of the questionnaire, have a difference of 0.15. Since these correlations are measuring professional development using various questions, it is likely that the explanation for the differences in these correlations lies in how the teachers responded to the various questions. Teachers from one subgroup may have interpreted the wording of questions differently than the teachers in the other subgroup. These results must be examined knowing that the sample sizes are limited. The reader should recall that the sample size for the teachers working at schools reporting high proportions of low-income students was  $n=16$ . This small sample size is one limitation of this study. The limitations of the study will be provided in the next section.

#### Limitations of the Study

Two factors limited the external validity of this study and another limitation of the study was found in the measurement of teacher's job satisfaction.

The first factor that limits the external validity of this study is common to many studies of this scale. The present study lacks sufficient time and money to completely study the characteristics of effective professional development in the State of Illinois. Given this problem, the present study focused on a single county in Illinois. This focus

guided the study to a population that fit the resources available for this study. Although the descriptions of the nineteen secondary schools depict a wide range of schools, they are all linked geographically and under the jurisdiction of the Lake County Regional Office of Education. This limited geographical range of schools could prevent the results from generalizing to a wider population.

Specifically, 13 of the 20 comprehensive public secondary schools in the county provided permission for the researcher to contact the math teachers of these schools. It is possible that these 13 schools do not properly represent the entire county. There may have been an underlying reason why certain schools did not grant permission for the study to be conducted that may be related to the relationships examined by this study. Furthermore, 64 of the approximately 300 teachers who were invited to participate completed the questionnaire. It is possible that the responses from these 64 teachers do not represent the population of mathematics teachers working in Lake County, Illinois. It is less reasonable to generalize these results to the population of secondary mathematics teachers in Illinois. One additional comment, as the results are divided into subgroups, for example the subgroup of teachers from schools reporting low-income rates greater than 40% contained sixteen teachers, it is questionable if the results calculated from this small group of teachers can be generalized to the population of teachers working at schools of this category. Overall, the sample size of the subgroups may limit the results from being generalized to the population. It will be recommended in the next section of this chapter how to remedy this limitation.

Also, the length of time the current study spans is limited to a current snapshot of professional development experiences. It is not the purpose of the current study to provide a longitudinal view of professional development in Lake County.

Furthermore, the resources were not available for this study to conduct a quasi-experimental study to investigate a cause and effect relationship between the variables: teacher professional development, teacher working conditions, and teacher job satisfaction. However, this study does support further research of the strong positive relationship between teacher professional development and teacher working conditions. Also, this study does provide a model for future studies to collect data and compare that data to the results provided in this study.

The second limitation of this study is the complexity of the connection between professional development experiences and the ultimate objective to improve student academic achievement. The models described by Guskey (1986) and Yoon et al. (2007), attempt to show that “teachers’ beliefs” and “teacher classroom practices” are interwoven in the connection between professional development and student academic achievement. There are far too many factors for one study to manage with regard to demonstrating a connection between teacher professional development and student academic achievement. This study examines the relationships between just a few of the teacher related factors. This focus is very narrow compared to the comprehensive models proposed by Guskey (1986) and Yoon et al. (2007). This examination of professional development experiences gives designers of professional development an initial position to evaluate future programs.



A third limitation of this study relates to the questionnaire's inability to differentiate levels of teacher job satisfaction. This limitation was highlighted as the results of the first research question demonstrated a lack of relationship between the two variables teacher professional development and teacher job satisfaction. The responses to item number 57 on the questionnaire were used to demonstrate this lack of variability. Item number 57 recorded the respondents' attitude toward the statement "I am satisfied working in my current school". The response 1 indicates that the respondent "strongly disagrees" with the statement. The response 2 indicates that the respondent "somewhat disagrees" with the statement. The response 3 indicates that the respondent "Neither disagrees nor agrees" with the statement. The response 4 indicates that the respondent "somewhat agrees" with the statement. The response 5 indicates that the respondent "strongly agrees" with the statement. The distribution of responses for the total group of 64 respondents shows that one teacher selected choice 1. Zero respondents selected choice 2. Fifteen respondents selected choice 3. Fifteen respondents selected choice 4 and 33 respondents selected choice 5. In the subgroup of 16 respondents from schools with low-income rates greater than 40%, one respondent selected 1 as his/her response. Nine respondents selected choice 3. Three respondents selected choice 4 and three respondents selected choice 5. Finally, in the subgroup of 48 respondents from schools with low-income rates less than 20%, all responses ranged between 3 and 5. Six respondents selected choice 3. Twelve respondents selected choice 4 and 30 respondents selected choice 5. As the 64 responses demonstrate, measures for the variable teacher job satisfaction were limited to choices 3 to 5 except for one respondent who selected choice

1. This cluster of responses demonstrates a lack of variability. The lack of variance in the subgroup of 48 responses was the strongest as 62.5% of the responses were the same response. Given this lack of variance amongst these responses measuring the variable of teacher job satisfaction, a relationship with any other variable would be difficult to detect. Therefore, this study was limited by the questionnaire's inability to measure the variable of teacher job satisfaction across a range of magnitudes.

Two factors--the lack of resources of this study, and the complexity of the relationship between professional development of teachers and the ultimate objective of improving student academic achievement--limited the researcher to conduct this small-scale study. Also, a third limitation became apparent after the data regarding teacher job satisfaction was collected.

### Recommendations for Future Research

Upon completing the data collection and analysis of this study, there is consideration for future studies to both extend and dig more deeply into the relationships of the variables teacher professional development, teacher job satisfaction, and teacher working conditions. This section will provide recommendations for six future studies to extend the investigations completed in this study.

First, the resources of this study limited the size of the population from which the data was acquired. A better-resourced investigation could incorporate a larger and more diverse population of teachers. The more diverse population would be valuable in confirming the external validity of the results discovered in this study to a more general population. For example, this study invited only secondary mathematics teachers to

participate. The population of the study could be expanded in three ways. The questionnaire could be administered to teachers of various content areas of secondary schools such as teachers of English, science, and social studies courses. Second, the questionnaire was not written specifically for secondary teachers. The questionnaire could be administered to elementary school and middle school teachers. Third, this online questionnaire could be completed by teachers in other counties of the state of Illinois or teacher of other states. Expanding the population of teachers who could complete the questionnaire in these three ways would provide valuable data to confirm or deny the external validity of the study.

Second, this research did not investigate the relationship between teacher professional development and student academic achievement. There exist many factors between the treatment of teacher professional development and the desired outcome of improved student academic achievement. Too many factors are intertwined within that relationship to be properly investigated by a small-scale study. Accordingly, a more focused perspective was chosen to investigate variables more closely related to the teacher, namely teacher professional development, teacher working conditions, and teacher job satisfaction. As this research demonstrated the positive relationship between teacher professional development and teacher working conditions, further research could investigate a related relationship between teacher working conditions and teacher job performance. By investigating the possible relationship between teacher working conditions and teacher job performance, the research literature on professional development could advance the understanding of the complex chain of connections

between teacher professional development and student academic achievement by one more link. After all, the ultimate goal of effective professional development for teachers is to improve student academic achievement.

Unfortunately, there remains much to be learned of the complicated relationship between teacher professional development and student academic achievement. It is more feasible for an entire field of research related to professional development to provide knowledge of the ultimate relationship between teacher professional development and student academic achievement instead of one study attempting to reveal the entire relationship. Therefore, by breaking down the colossal relationship between teacher professional development and student academic achievement, the field of study is more likely to progress the understanding of the entire relationship. Therefore, future studies are recommended to extend the knowledge gained from this study, which demonstrated a statistically significant relationship between teacher professional development and teacher working conditions.

Third, the results of this study provided measurements for nine relationships between the collection of ten variables. Five of the measurements showed moderate to strong positive relationships. In particular, the relationship between teacher professional development and school leadership demonstrated a very strong positive relationship. It is recommended the variables that demonstrated the strongest relationships be studied in more depth. A future study could use an important implication of this study. The important implication is that the analysis of the 23 lists of recommended characteristics of professional development has been completed and the analysis discovered that the

most frequently mention characteristics of professional development programs feature: 1) Collaboration between teachers, 2) Enhancement of teachers' pedagogical and content knowledge, and 3) Sufficient time and resources. Again, further research could study the relationship between these specific characteristics of professional development and the areas of teacher working conditions that had the strongest relationships found from this current study.

The fourth recommendation of a future study relates to the overall mean measuring the factor of time in a teacher's workday. Recall, there were ten overall means calculated for the variables of this study to measure the relationships described in the research questions. Three items in the teacher working conditions section of the online questionnaire asked if teachers: 1) Had sufficient time to meet the educational needs of all students, 2) Had sufficient time to collaborate with colleagues, and 3) Had sufficient non-instructional time during their work-day. The overall mean from all responses to these three items was the lowest relative to all other nine variables of the study for all groups of schools. This aspect of the study was not a focal point, but it is worth mentioning. It is possible that the one area of teacher working conditions that teachers report is the least adequate is the amount of time: 1) To work collaboratively with their colleagues, 2) To prepare for their classes, and 3) To meet the instructional needs of all the students. The result of these low values indicates that future research should consider the factor of time in a teacher's workday.

The fifth recommendation for an additional study relates to the lack of relationship between the two variables teacher professional development and teacher job

satisfaction. As many teachers reported similar levels of teacher job satisfaction, it is possible the questionnaire did not differentiate levels of high teacher job satisfaction. A future study, which administers a refined version of the questionnaire that differentiates teacher job satisfaction more effectively, could provide more information regarding the relationship between the variables teacher professional development and teacher job satisfaction.

Last, the responses of the questionnaires create a benchmark for school leaders to measure these same variables over time. This questionnaire could be administered to the same population of teachers after a given period of time to monitor the change of these variables over time. A particular school could use these measures to monitor the implementation of professional development programs offered to teachers. Furthermore, over a given period of time, individual schools could use their own measures of student academic achievement to investigate the relationship to the variables teacher professional development, teacher working conditions, and teacher job satisfaction.

Table 15 provides the overall means and standard deviations for each of the 10 variables measured in this study. Also, these descriptive statistics are categorized based on the low-income rates reported by the schools. These descriptive statistics provide to the reader relative measures of these variables as compared to each other. One additional comment about the statistics provided in Table 15 relates to the variables *time and resources* and *time factors*. Note that the variable *time and resources* relates to the professional development activities, which the teachers experience. These means indicate that the teachers feel the amount of time and resources provided during

professional development experience is better as compared to the other characteristics of teacher professional development. These values are relatively high as compared to all other variables included in the table. However; the measures for the variable *time factor* that is a factor of teacher working conditions is the lowest measure relative to all others on the table. This measure of *time factors* refers to the amount of time the teachers have during their workday to prepare for their classes, to meet with students, or to collaborate with other teachers. It is an interesting, although auxiliary result, that the teachers' perception of the amount of time and resources provided for teacher professional development was high relative to the other variables of the study, while the time factors related to the teachers' daily schedule was perceived to be very low relative to the other variables of the study. This auxiliary result could indicate a need to examine teacher's schedule in relation to the tasks they are required to complete during the day.

Table 15

*Means and Standard Deviations for Ten Variables*

		<i>Low Income Rates &gt;40%</i>		<i>Low Income Rates &lt;20%</i>	
		n=16		n=48	
		Mean	Standard Deviation	Mean	Standard Deviation
1	Teacher Professional Development	3.14	0.47	3.51	0.54
2	Teacher Working Condition	2.83	0.68	3.52	0.61
3	Teacher Job Satisfaction	3.08	0.77	3.62	0.59
4	Collaboration	3.14	0.65	3.54	0.83
5	Enhance Knowledge	2.83	0.69	3.09	0.70
6	Time and Resources	3.45	0.67	3.90	0.52

7	Teacher Working Conditions-Time factors	2.28	0.89	2.63	1.00
8	Teacher Working Conditions- Facilities and Resources	3.02	0.75	3.88	0.54
9	Teacher Working Conditions-School Leadership	2.85	0.82	4.03	0.65
10	Teacher Working Conditions- Professional Development	2.89	0.83	3.22	0.80



## APPENDIX A

### LETTER REQUESTING PERMISSION TO CONTACT TEACHERS

Tom Meagher  
Loyola University Chicago  
School of Education  
Lewis Towers  
820 North Michigan Avenue  
Chicago, Illinois 60611  
[tmeaghe@luc.edu](mailto:tmeaghe@luc.edu)

Dear Principal:

I am a candidate for a doctorate at Loyola University Chicago, and I am writing to ask for your help in conducting an investigation of the associations between professional development experiences, teacher working conditions, and teacher job satisfaction. The study proposes to distribute an online survey to secondary mathematics teachers at nineteen of the twenty public secondary schools in Lake County. The survey is a unique instrument that combines items specifically created for this study and the Teacher Working Conditions Survey from the New Teacher Center.

Specifically, I am asking you to write a letter on your school letterhead granting permission for me to contact the secondary mathematics teachers in your school. The secondary mathematics teachers would be asked to complete a twenty-minute survey. In return, I will be happy to share my findings with you when the study has been completed. Be assured that all individual responses will be kept strictly confidential, and the results of this study will be reported in summary or statistical form only, so that neither individuals nor schools can be identified.

I have enclosed a copy of the survey for your review. Besides investigating the associations described above, the results of the study will provide a benchmark of current professional development programs and job satisfaction to compare with data of possible future program initiatives. Ultimately, the results provide a research-based procedure to measure the quality of professional development programs as perceived by the secondary mathematics teachers in Lake County, Illinois and to justify funding for future professional development programs for the high school.

At your convenience, I would enjoy the opportunity of discussing the study's details further with you. I look forward to hearing from you. Thank you very much.

If you have any questions about this research study, please feel free to contact Tom Meagher at [tmeaghe@luc.edu](mailto:tmeaghe@luc.edu) or (847) 338-4766. You may also contact Dr. Brigid Schultz at [bschul1@luc.edu](mailto:bschul1@luc.edu) or (312) 915-7089.

Sincerely,

Tom Meagher

## APPENDIX B

### LETTER OF INTRODUCTION TO MATHEMATICS TEACHER

This letter will be included in the email sent to the participants

Dear Mathematics Teacher:

You are being invited to take part in a research study being conducted by Tom Meagher for a dissertation under the supervision of Dr. Brigid Schultz from the School of Education at Loyola University of Chicago. The research will investigate the associations between professional development experiences, teacher working conditions, and teacher job satisfaction. Each teacher in the department will receive an email that will provide instructions on how to use the hyperlink to connect to the online questionnaire. The online questionnaire was designed for a participant to complete in less than twenty minutes. The questionnaire consists of approximately sixty items that are mostly Likert items. The remaining items are multiple-choice questions. There are no free response items in the survey.

This is an anonymous survey. Demographic questions will be asked in order to sort responses to investigate findings. No findings will be derived from individual responses. No responses will be singled out and reported.

APPENDIX C  
ONLINE QUESTIONNAIRE

## Online Questionnaire

Please circle the number that best represents your experience.		Never	Seldom	Sometimes	Frequently	Always
1	My professional development activities are scheduled exclusively with teachers who work in my subject area.	1	2	3	4	5
2	I am part of a team of teachers during my professional development experiences.	1	2	3	4	5
3	I believe that the teachers that work with in my professional development activities share a common goal and vocabulary related to our work with students.	1	2	3	4	5
4	My professional development activities allow me to be an active member of a peer study group.	1	2	3	4	5
5	I do not work on a daily basis with the teachers who attend the professional development activities I attend.	1	2	3	4	5
6	During my professional development activities, teachers in my subject area review and discuss student work of our subject area.	1	2	3	4	5
7	During my professional development activities, I am provided with data on student achievement related to my subject area.	1	2	3	4	5
8	During my professional development experiences, I discuss and review teaching materials that are appropriate for my classroom.	1	2	3	4	5

Please circle the number that best represents your experience.		Never	Seldom	Sometimes	Frequently	Always
9	My professional development activities are scheduled during regular school hours.	1	2	3	4	5
10	My professional development activities occur regularly throughout the school year.	1	2	3	4	5
11	My professional development activities occur in a location that is convenient for me to attend.	1	2	3	4	5
12	My professional development activities occur at a location outside of my school.	1	2	3	4	5
13	My professional development activities occur after regular school hours.	1	2	3	4	5
14	During my professional development experiences, I have access to teaching materials that potentially could be used in my classroom.	1	2	3	4	5
15	My professional development activities enhance my content knowledge for the courses I teach.	1	2	3	4	5
16	My professional development activities enhance my pedagogical knowledge for the courses I teach.	1	2	3	4	5

	<b>Please circle the number that best describes your experience.</b>	<b>Strongly disagree</b>	<b>Somewhat disagree</b>	<b>Neither disagree nor agree</b>	<b>Somewhat agree</b>	<b>Strongly agree</b>
17	Teachers have sufficient time to meet the educational needs of all students.	1	2	3	4	5
18	Teachers have time available to collaborate with their colleagues.	1	2	3	4	5
19	The non-instructional time provided for teachers in my school is sufficient.	1	2	3	4	5
20	Teachers have sufficient access to appropriate instructional materials and resources.	1	2	3	4	5
21	Teachers have sufficient access to instructional technology, including computers, printing, software and internet access.	1	2	3	4	5
22	Teachers have adequate professional space to work productively.	1	2	3	4	5
23	Teachers must supplement instructional materials and supplies with their own resources.	1	2	3	4	5
24	Teachers have sufficient access to certified support personnel.	1	2	3	4	5
25	There is an atmosphere of trust and mutual respect within the school.	1	2	3	4	5
26	Teachers feel comfortable raising important issues and concerns to school leadership.	1	2	3	4	5
27	The faculty is committed to helping every student learn.	1	2	3	4	5
28	The faculty and staff have a shared vision.	1	2	3	4	5
29	The procedures for teacher performance evaluations are consistent.	1	2	3	4	5
30	Teachers receive feedback from school leadership that can help them improve teaching.	1	2	3	4	5
31	Overall, the school leadership in my school is effective.	1	2	3	4	5



Please circle the number that best describes your experience.		Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
32	Professional development provides teachers with the knowledge and skills most needed to teach effectively.	1	2	3	4	5
33	Enhancing teacher knowledge and skills receives priority as a strategy to improve student achievement.	1	2	3	4	5
34	Professional development offerings are data-driven.	1	2	3	4	5
35	Teachers receive follow up from professional development opportunities that help them improve their teaching.	1	2	3	4	5
36	Teachers are provided opportunities to learn from one another.	1	2	3	4	5
37	School leadership makes a sustained effort to provide quality professional development at school.	1	2	3	4	5
38	Adequate time is provided for professional development.	1	2	3	4	5
39	Professional development provides teachers with strategies that they can incorporate into their instructional delivery methods.	1	2	3	4	5

40	Professional development has proven useful to teachers in their efforts to improve student achievement.	1	2	3	4	5
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41. Which best describes your future intentions for your professional career?

- A. Continue working at my current school as I am able
- B. Continue working at my current school until a better opportunity comes along
- C. Continue working in education but leave this school as soon as I can
- D. Continue working in this district only until I can leave education altogether

Please rate how strongly you agree or disagree that the following factors influence your decision making about your future intentions for your professional career.		Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
42	Adequate facilities and/or resources	1	2	3	4	5
43	Adequate support from school leadership	1	2	3	4	5
44	Collegial atmosphere amongst the staff	1	2	3	4	5
45	Teaching assignment (subject, students)	1	2	3	4	5
46	Time during the work day	1	2	3	4	5
47	Empowerment to make decisions that affect my school and/or classroom	1	2	3	4	5
48	Effectiveness with the students I teach	1	2	3	4	5
49	Salary	1	2	3	4	5
50	Cost of living of the community in which my school is located	1	2	3	4	5
51	Student behavior	1	2	3	4	5
52	Degree of testing and accountability	1	2	3	4	5

53	The community environment where I live	1	2	3	4	5
54	Retirement options	1	2	3	4	5
55	Personal reasons (health, family, etc.)	1	2	3	4	5
56	Overall, my school is a good place to work and learn.	1	2	3	4	5
57	I am satisfied working in my current school.	1	2	3	4	5

58. Which aspect of your work environment most affects your willingness to keep teaching at your school?

- A. Time during the work day
- B. School facilities and resources
- C. School leadership
- D. Professional development

59. Which aspect of your work environment most affects teachers' willingness to keep teaching at your school?

- A. Time during the work day
- B. School facilities and resources
- C. School leadership
- D. Professional development

60. Which aspect of working conditions is most important to you in enhancing student learning?

- A. Time during the work day
- B. School facilities and resources
- C. School leadership
- D. Professional development

61. Indicate the school at which you are currently teaching

- A. Antioch High School
- B. Adlai Stevenson High School
- C. Barrington High School
- D. Deerfield High School
- E. Grant High School
- F. Grayslake Central High School
- G. Grayslake North High School
- H. Highland Park High School
- I. Lake Forest High School
- J. Lake Zurich High School
- K. Lakes Community High School
- L. Libertyville High School

- M. Mundelein High School
- N. North Chicago High School
- O. Round Lake High School
- P. Vernon Hills High School
- Q. Warren Township High School
- R. Wauconda High School
- S. Waukegan High School
- T. Zion-Benton High School

62. Indicate your gender

- A. Female
- B. Male

63. What is the highest degree you have attained?

- A. Bachelor's degree
- B. Master's degree
- C. Doctorate

64. Please indicate your ethnicity. (Select one)

- A. American Indian or Alaska Native
- B. Asian or Pacific Islander
- C. Black or African American
- D. Hispanic
- E. White
- F. Mixed or multiple ethnicity
- G. Some other race or ethnicity

65. How many total years have you been employed as an educator? (Round up to the nearest year.)

- A. First year
- B. 2-3 years
- C. 4-6 years
- D. 7-10 years
- E. 11-20 years
- F. 20+ years

66. How many total years have you been employed in the district in which you are currently working? (Round up to the nearest year.)

- A. First year
- B. 2-3 years
- C. 4-6 years
- D. 7-10 years
- E. 11-20 years
- F. 20+ years

67. How many total years have you been employed in the school in which you are currently working? (Round up to the nearest year.)

- A. First year
- B. 2-3 years
- C. 4-6 years
- D. 7-10 years
- E. 11-20 years
- F. 20+ years

## APPENDIX D

### EMAIL GRANTING PERMISSION FROM DR. ERIC HIRSCH

**Brigid Schultz - RE: TWCS**

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**From:** "Eric Hirsch" <ehirsch@newteachercenter.org>  
**To:** Bschull1@luc.edu  
**Date:** 3/5/2010 3:31 PM  
**Subject:** RE: TWCS  
**CC:** tmeagher@lfschools.net

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Dr. Schultz.

I wish Tom the best and he has our full permission to utilize any of the questions. We have conducted the survey in other venues with some alterations and I'm happy to work with you and Tom around any of the questions and providing information on validity and reliability of our instruments.

Eric

----- Forwarded message -----  
**From:** **Brigid Schultz** <Bschull1@luc.edu>  
**Date:** Wed, Mar 3, 2010 at 3:50 PM  
**Subject:** TWCS  
**To:** ehirsch@newteachercenter.org  
**Cc:** tmeagher@lfschools.net

Dr. Hirsch,

This email is to verify that Tom Meagher, a Loyola University doctoral student, is currently working on his doctoral dissertation and that I am serving as his Committee Chair. Tom has been in contact with you in regard to using a number of items from your TWCS.

Please let me know if you have any further questions.

Dr. Brigid Schultz  
 Clinical Assistant Professor  
 School of Education  
 Loyola University Chicago  
 820 N. Michigan Ave.  
 Chicago, IL 60611  
 312/915-7089

APPENDIX E

INFORMATION ON NEW TEACHER CENTER





#### Calendar of Events

- Annual Symposium
- Induction Institute

#### Overview

##### Policy Development and Support

- National
- State
- Local

##### Teaching & Learning Conditions Survey

- Teaching & Learning Conditions
- Teaching & Learning Conditions Survey
- Implementing the Survey
- Key Findings from the Survey
- Using Results to Inform Policy and Practice
- Participating States and School Districts

#### Scope of Work

##### Products & Services

- Publications
- Consulting Services

##### Resources

- Policy Reports
- Online Resources

##### Personnel

##### View cart/Checkout

#### Contact Us

New Teacher Center  
725 Front Street,  
Suite 400  
Santa Cruz, CA  
95060

#### Email

831-600-2200 (v)  
831-427-9017 (f)

#### POLICY

##### Teaching & Learning Conditions

To do their jobs well, educators need supportive school environments where they are valued, trusted and can collaborate to improve instruction. Research has shown that the quality of teaching conditions can encourage or constrain good teaching and impacts student achievement. [View Research](#)

While strong connections among teaching conditions and teacher recruitment, retention and student success have been documented, policymakers have not had the kind of data necessary to understand and address this important issue. Understanding and improving teaching conditions can result in:

- Increased student success
- Improved teacher efficacy and motivation
- Enhanced teacher retention
- Targeted recruitment strategies to bring educators to hard-to-staff schools

"Through the TELL Maryland Survey, Teaching, Empowering, Leading and Learning, our teachers will be able to provide anonymous firsthand feedback about how we continue to improve public education in Maryland."

—Governor Martin O'Malley about the state's Teaching & Learning Conditions Survey

Visit <http://tellmaryland.org/> for details on Governor O'Malley's Teaching Conditions Initiative

##### Teaching & Learning Conditions Survey

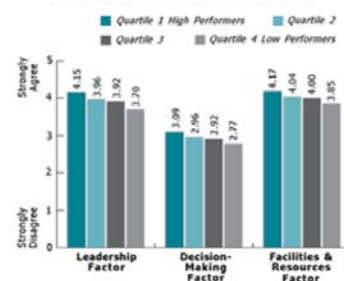
Based on the pioneering work of Governor Mike Easley and the North Carolina Professional Teaching Standards Commission, the Teaching & Learning Conditions Survey begun in 2002 has now been replicated across

##### Key Findings from the Survey

Survey results highlighted strong connections among student achievement, teacher retention and teaching conditions—particularly school leadership, teacher engagement and community involvement. When controlling for a multitude of student, teacher and school characteristics, analyses were consistent across states: educators reporting strong leadership; sufficient resources and support; and a manageable workload had higher student achievement. [Read nationally renowned Dr. Helen Ladd's most recent research paper on this topic.](#) (PDF Download 1.6MB)

[Click here to view sample of cross state analyses](#)

Teaching Conditions by Performance Composite for Elementary Schools (North Carolina)



Research and selected findings from the survey in many states confirm that Teaching and Learning Conditions have significant impact on:

- [Improved Student Learning](#) (PDF Download 251KB)
- [Improved Teacher Efficacy and Motivation](#) (PDF Download 200KB)
- [Improved Teacher Retention](#) (PDF Download 267KB)

the nation. For details and findings please visit [www.ncteachingconditions.org](http://www.ncteachingconditions.org). The Survey is an online tool that collects perceptions of ALL teachers, principals and other licensed educators in participating states. On the Survey, respondents answer questions about the presence of critical teaching conditions including:

- Facilities and resources
- Time
- Decision-making
- School leadership
- Community support

Survey results provide local school and district leaders data that can be used for school improvement planning, while state leaders can use data to inform discussions and support sound educational policymaking. [View sample school results here.](#)

### Implementing the Survey

The New Teacher Center, out of the North Carolina-based office, assists states and school districts in administering the anonymous, web-based Teaching & Learning Conditions Survey and has a proven track record of successful administration in eleven states. Working with a broad coalition of stakeholders, policymakers and practitioners the NTC will:

- Design a Teaching & Learning Conditions Survey and Communications Plan that best reflect the needs of the state. The NTC will work to bring together policy makers, practitioners, and stakeholders to promote the initiative and design a survey based on a validated set of questions used in other states. The NTC will work with states to ensure the success of the initiative.
- Provide an online Teaching & Learning Conditions Survey process by which every school-based educator will receive an anonymous login code that identifies the school in which they work to ensure that they take the Survey only once.
- Produce individual school and district Teaching & Learning Conditions Survey results where a sufficient response rate was achieved, as well as an aggregate state report.
- Analyze teaching conditions results and explore connections between positive teaching environments and other variables

- [New recruitment Strategies to Entice Educators to Hard-To-Staff Schools](#) (PDF Download 218KB)
- [Equitable Distribution of Resources](#) (PDF Download 223KB)

### Using Results to Inform Policy and Practice

The Teaching & Learning Conditions Survey has the longest history in North Carolina where policymakers at different levels have utilized Survey data in different ways. Local education leaders have used results at the district level to further bond initiatives. At the state level, data was used in rewriting standards for principals and teachers. The Survey initiative has been so expansive that it has supported the creation of additional funding for professional development in low-performing schools. Results also have led to the development of school leadership training which requires administrators to use Survey data in making school-level improvement decisions.

[Read "The Intersection of Policy and Practice"](#) (PDF Download 132KB)

In other states, such as Massachusetts, state leaders allocated \$200,000 to support utilizing Teaching & Learning Conditions Survey data in low performing school districts. One local district in this state changed professional development offerings and provided teachers more autonomy in selecting growth opportunities in response to Survey feedback.

"Information is what legislators operate on, and this is great currency for us."

—Rep. Rick Glazier (N.C.) about the Teaching & Learning Conditions Survey initiative [as quoted in State Legislatures magazine \(Sept. 2009\)](#) (PDF Download 200KB)

### Participating States and School Districts

In 2008-2009 more than 300,000 educators completed the Teaching & Learning Conditions Survey. Data has been provided to almost 10,000 schools. New Teacher Center clients in 2008-2009 include:

- [Alabama](#)
- [Colorado](#)

such as student achievement and teacher retention. This includes specific analyses for subsets of schools or educators.

- Design training materials to help coalition partners understand and use the Teaching & Learning Conditions Survey results for school improvement planning.

- [Fairfax County \(VA\)](#)
- [Illinois](#)
- [Kansas](#)
- [Maine](#)
- [Maryland](#)
- [Massachusetts](#)
- [North Carolina](#)
- [Vermont](#)
- [West Virginia](#)

The NTC recently received a grant from the **Bill & Melinda Gates Foundation** to administer a Teaching & Learning Conditions Survey as part of the foundation's Measures of Effective Teaching (MET) project. The Survey will be administered in select schools and districts participating in the MET project across the country.

The NTC welcomes **Kentucky** as our newest client!

"The Teaching & Learning Conditions Survey results focused our work on improving the working conditions of teachers and principals which in turn led to improved learning results for ALL children."

—Dr. Terry Holliday, Superintendent,  
2008 National Baldrige Quality Award  
Recipient

[« t o p »](#)

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For further information about the Teaching & Learning Conditions Survey please contact:

New Teacher Center-North Carolina  
2800 Meridian Parkway, Suite 100  
Durham, North Carolina 27713  
919-806-2200

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## VITA

Thomas Meagher was born and raised in Palatine, Illinois. He attended the University of Notre Dame, where he earned a Bachelor of Business Administration in 1987. Thomas pursued a brief career in the financial markets at the Chicago Board of Trade. In 1993, he began to prepare for a career in education at DePaul University in Chicago, Illinois. He earned his Illinois State Teaching Certificate in 1996, and began his teaching career at Benjamin Franklin High School located in Palos Heights, Illinois, where he worked for two school years. He completed a Master of Arts in mathematics education from DePaul University in 1998.

In 1998, Thomas began working at Lake Forest Community High School District 115. He taught various levels of mathematics as a full time teacher until the fall of 2008. At that time, he was promoted to the position of Instructional Director of Mathematics at the high school and currently holds that position.

In 2006, Thomas began two programs at Loyola University Chicago. The first of the two programs allowed him to earn the Illinois State General Administrative Endorsement, which he completed in 2010. The second program guided him through the completion of this dissertation.

Thomas is a member of the following professional associations: National Council of Teachers of Mathematics, National Council of Supervisors of Mathematics, and the National Staff Development Council. By implementing the knowledge he has gained

from his involvement with these associations and Loyola University Chicago, Thomas has worked to enhance the mathematics educational experience of the students at Lake Forest Community High School District 115.

## DISSERTATION COMMITTEE

The Dissertation submitted by Thomas Meagher has been read and approved by the following committee:

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